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BRITISH MEDICAL JOURNAL

JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

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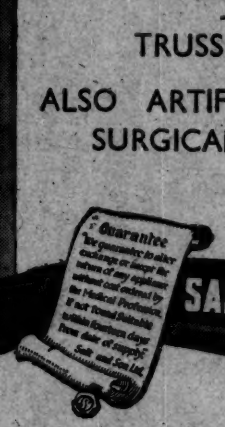

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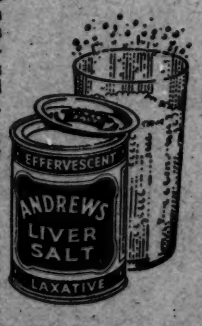

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY JULY 14 1945

SOME NEW DEVELOPMENTS IN THE MORPHOPHYSIOLOGY OF THE CEREBRAL CORTEX

BY

Prof. S. SARKISOV, M.D.

The study of the mechanism of the physiological and pathophysiological processes of the brain has for a long time occupied the attention of investigators. The work of I. P. Pavlov on conditioned reflexes has opened new ways to the understanding of the activities of the brain up to the most complicated ones—i.e., the highest nervous activities. There is no need to stress the importance of these experimental investigations, which furnish us with new ideas and methods for the better understanding of the cerebral processes, both normal and pathological, of man. A few examples of the work done will illustrate the position.

M. K. Petrova, one of the oldest pupils of Pavlov, succeeded in establishing in different dogs different types of nervous system with the precise characteristics of the various breeds. Petrova has furthermore ascertained that by inducing conditioned reflexes it is possible to produce experimentally in dogs nervous conditions which are characteristic of typical forms of neurosis. It is important to note, too, that she has ascertained that by the administration of a special dosage of bromine this experimentally produced neurosis can be completely cured.

Very interesting from the point of view of the influence of the cerebral cortex on the pathology of the organism are the experiments on conditioned reflexes in combination with the application of camphor. In the laboratories of Pavlov one of his pupils, Dolin, combined the use of the conditioning stimulant with the introduction into the organism of the dog of camphor, which, as is well known, causes convulsive epileptic fits. Having established the conditioned reflex through the introduction of camphor, Dolin succeeded, solely by means of the conditioning stimulant, without the introduction of camphor, in causing epileptic fits in the dog.

The investigations into the problem of the influence of the cerebral cortex upon the inner organs are, for medicine, in the broadest sense of the word, of particular importance. While up till now we have been able to speak only *a priori* of the influence of the "psyche" on somatic processes, the experimental investigations of K. M. Bukow and his pupils, using the methods of conditioned reflexes, have revealed definite physiological laws and the interdependence of the cerebral cortex and the inner organs—the heart, stomach, spleen, liver, urogenital organs, etc. These investigations show how, by causing certain conditioned reflexes in dogs, one can influence and alter the action of such organs as the liver, the kidneys, and the stomach. On the other hand, by a series of experiments, changes in the highest nervous activities of an animal, dependent on the condition of the inner organs, have been established. These experiments have shown the influence on the cerebral cortex of the impulses originating from the inner organs—in other words, the place which the most complex inner world of an animal has in its physiological behaviour has been established.

In these experiments it was found that, in causing conditioned reflexes or conditioned reflexive activity in an animal, new "temporary connexions" between the various sections of the central nervous system and the various organs and tissues of the organism are apparently created.

These investigations, in further developing the teaching of Pavlov on conditioned reflexes, have made it necessary to deal with the question of the morphophysiological nature of these "temporary connexions" formed in the complicated processes of the brain. Knowledge of the mechanism of these processes and their morphophysiological relations would offer new possibilities for the identification of pathological symptoms in the brain.

Recent Electro-physiological Investigations

Of great importance for this research work are the recent electro-physiological investigations, particularly of the bio-electrical phenomena of the brain, and also the new data on the finest structural features of the cerebral cortex. Bio-electrical investigations (electro-encephalograms)—carried out in various laboratories of the Soviet Union by Sarkisov, Livanov, Russinov, and Steinberg; in England by Adrian, Matthews, Walter, Ultridge, and others; and in America by Lenox, Gibbs, Davis, and others—have opened up fresh possibilities of a dynamic conception of the delicate mechanism involved in brain activity.

The numerous investigations of the last 10 to 15 years have considerably enriched our knowledge of the electro-physiological mechanism of the various sections of the central and peripheral nervous system in both the normal and the pathological state. We have now definite conceptions of the chief characteristic peculiarities of the bio-electrical current curves of the cerebral cortex, of its various sections, of the finest laminae of the cortex, of the post-cortical formations, of the peripheral nervous system, and so on. A series of investigations have also been made on bio-currents in the state of waking, sleeping hypnosis, and so on.

Very interesting are the investigations into the bio-electrical manifestations of the brain under different influences. We were able to establish, for instance, the laws governing the variations in these manifestations under the influence of various narcotic substances—e.g., strychnine, morphine, and others (Sarkisov). It is important to note, for instance, the following fact. As we know, morphine has a depressing effect on the central nervous system. Yet our electro-encephalograms have shown that it acts differently on each region of the cerebral cortex, and that in the different stages of narcosis the potentials of the various sections of the cortex and the post-cortex are dissimilar.

Our investigations, and those of others, have shown numerous changes of the normal brain potentials in cases of mental disease—e.g., epilepsy, schizophrenia, manic-depressive conditions, and so on—and also as a result of various changes in metabolism. Of great importance also is the study of the bio-electrical manifestations in the case of organic diseases of the brain. Characteristic alterations of the ordinary encephalogram occur, for instance, in cases of tumours of the brain. Of considerable and practical interest, in this respect, are the investigations of Grey Walter, who has suggested a novel method of using bio-currents for ascertaining the seat of disease in a case of brain tumour. Our investigations of the bio-electrical phenomena in the presence of artificially caused tumours of the brain in animals have produced curious results. It was found that the bio-electrical phenomena are directly dependent on the seat and also on the character or nature of the tumour. We have produced tumours in the brain of rabbits experimentally, and have carried out series of investigations on these animals by

means of electro-encephalograms. The tumours were muscular, "paraffinous," and "cancerous."

These investigations (Sarkisov and Penzik—published in 1940) revealed characteristic slow vibrations of the bio-electric potentials near the tumour. We noticed alterations of a somewhat different character at a considerable distance from the tumour, and it is particularly necessary to emphasize that the bio-currents of the brain vary according to the kind of tumour.

Fig. 1 shows an electro-encephalogram of a tumorous human brain with characteristically slow vibrations of 4 to 5 per second, instead of 10 to 12 vibrations in the normal state.

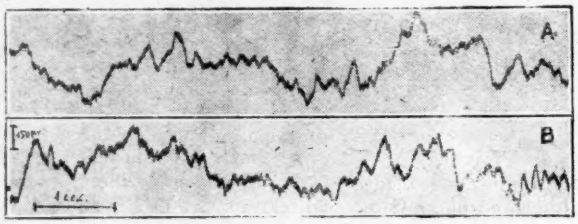

FIG. 1.—An electro-encephalogram of a tumorous human brain, 13/10/43. A, left temporal; B, right temporal.

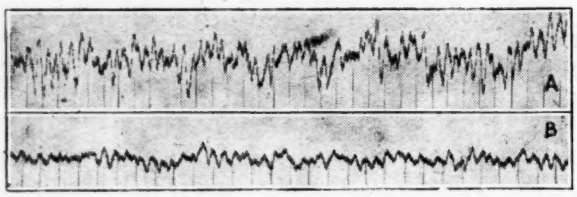

FIG. 2.—Same brain as Fig. 1. A, left occipital; B, right occipital. Recording, 30/10/43; operation, 22/11/43. Follicular abscess in right parietal area. Restricted injury of the cortex and of the white substance of the upper temporal area. Time recording, 0.2 sec.

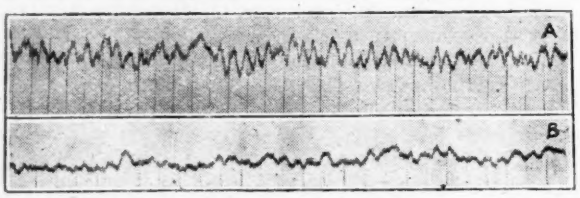

FIG. 3.—Same brain as Figs. 1 and 2. A, left central; B, right central. Time recording, 0.2 sec.

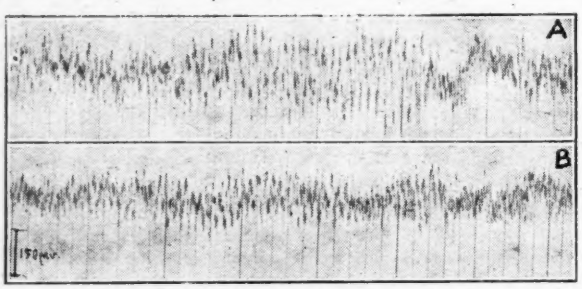

FIG. 4.—A, left occipital; B, right occipital. Deep injury of the left premotor region reaching the subcortical ganglia, with a metal fragment in the left frontal zone. Cicatrization not complicated by the purulent process. Time recording, 0.2 sec.

In our laboratories, Russinov, Livanov, Preobrashenskaya, and Lurya have during the war done a considerable number of electro-encephalograms (more than 1,300) in cases of various forms of cranium-brain wounds, and particularly of abscesses of the brain. The curves in Fig. 2 characterize the bio-electrical currents of the occipital regions of the brain in cases of various diseases of the parietal area. In Fig. 3 the curves depict the variations in the bio-electrical currents of the central region (right and left) of the same brain. Fig. 4 shows the curves of the right and left occipital regions of the injured cranium. The deep wound is in the left premotor region (reaching to the subcortical ganglia, with a metallic fragment), and in the left frontal region with a cicatrix (without abscess).

These examples should suffice to prove that the electro-encephalograms represent the separate nervous processes of the tissue of the brain in both normal and pathological states. However, it is necessary to emphasize that in each single case much in the electro-encephalogram is as yet obscure—that is, not accessible to analysis in the light of our physiological knowledge. Still, the data of the electro-encephalograms undoubtedly aid the examination of the various aspects of the complex brain processes. By means of the encephalogram we are now able, in a considerable percentage of cases, to pronounce on the character and periods of epilepsy, on tumours and abscesses, on the seat of a disease; and we can speak of a disease in the sense of its being local, and so on.

I have no space here to deal with another aspect of the electro-encephalographic investigation—the functions of the nervous tissue, central and peripheral, the laws governing the processes of excitation and inhibition, and other questions. Much has been done in this field in the Cambridge laboratories (Adrian) and in the Moscow Brain Institute (Livanov), and by others.

Physiology of the Brain

In connexion with our new ideas on the physiology of the most differentiated nervous activity and on the physiology and pathology of the cerebral cortex, our knowledge of the minute morphological organizations and connexions of the cortex is also broadening. We have now considerable knowledge of the brain, and especially of the cortical formations and the various architectonic cellular structures of the most highly organized matter of that organ. At the Moscow Brain Institute during the last 15 to 20 years specialized investigations in the phylogenesis (pertaining to a species) and ontogenesis (individual development) of the brain, and particularly of the cerebral cortex, have considerably extended our knowledge of its complex organization. Specific laws have been established governing the formation of the minute architectonic structures of the cortex and the cerebrum as a whole, in the various stages of their phylogenetic and ontogenetic development. The results of these investigations have been publishd in the form of separate works and monographs by the research workers at the Moscow Brain Institute—Philimonoff, Sarkisov, Kolonova, Blinkov, Preobrashenskaya, and others.

In emphasizing these achievements of modern neurology it may be said that our conceptions of the architectonic features of the cerebral cortex do not suffice to reveal the fundamental morphophysiological mechanism of the cortical function. In order to extend further our knowledge of the morphophysiological mechanism of the functions of the brain it is necessary to study the multiformity of the cellular architecture together with the picture of the elaborate and complex intercellular connexions and their dynamics.

Structure of the Cerebral Cortex

The methods of architectonic investigation have been of great use in establishing the general features of the structure of the cerebral cortex, its division into separate areas and regions according to the character of the various cellular and fibroid laminae, and so on. These investigations play a particular part in solving one of the fundamental problems of modern neurology—i.e., the problem of localization. The data obtained in this way are the basis for further advancement in the study of the brain. It will be necessary, however, to ascertain how the formation of the neurons of the cortex in their entirety proceeds—i.e., to trace the development of the different types of neural cells of the cortex with all their appendices; that is, the dendrites and their axons. Furthermore, it is necessary to discover how in the process of development the connexions between the various groups of neurons establish themselves inside the individual cortical formations, as well as between the various cortical regions. What I have in mind is the significance of the most delicate connexions—i.e., the synapses in the cerebral cortex. The treatment of this question is indispensable to the understanding of the intimate physiological and pathological processes of the brain.

It is well known that the method of Golgi provides the possibility for this study. It is particularly necessary to emphasize that up till now the finest connexions between the neurons in the cortex, as distinct from the synapses of the peripheral

nervous system and, to a certain degree, of the lower section of the central (cerebrospinal) system, have been studied quite inadequately, if one leaves out of account the well-known work of Ramón y Cajal and others. This is due, in the first place, to the enormous difficulties arising in the study of the synaptic mechanism, especially in the cortex—as the most complicated part of the cerebral nervous system. These difficulties arise particularly in the study of the cerebral cortex of an adult. Therefore it should be expedient to study, by the method of Golgi, the cerebral cortex in ontogenesis, when the intercellular connexions and their structural features are comparatively simple and more easily accessible.

So far as we know, the study of the ontogenetic development of the cerebral cortex by Golgi's method has not yet been fully

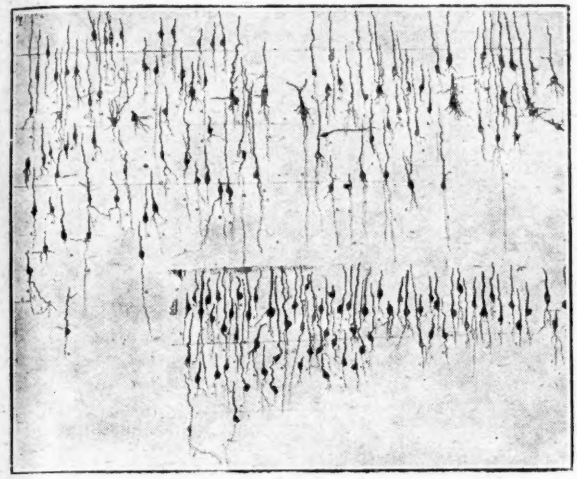

FIG. 5.—Four-lunar-months foetus. Above, formation of the precentral cortex (area 4). Below, formation of the optical cortex (area 17).

carried out. (Cajal investigated chiefly the brain of the newborn and in the first months after birth.) The first to start these researches was Dr. G. I. Polyakov, in the Moscow Brain Institute. It is not my aim to give a full account of his investigations into the study of the functioning of the cerebral cortex. Polyakov is about to publish his results in a monograph. Still,

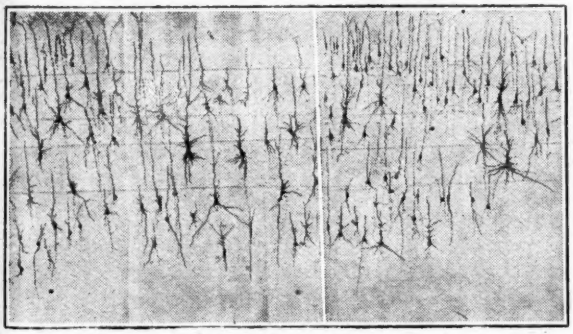

FIG. 6.—Five-and-a-half-months foetus. Left, precentral area 4; right, postcentral area 1.

I would like to give at least a few illustrations from his studies, so as to convey some idea of the importance of the data obtained.

Fig. 5 shows the picture of the cellular structure in an embryo of 4 lunar months, where the upper lamina of the cells has been taken from the precentral region, and the lower lamina from the optical cortex—i.e., from the occipital pole of the brain. We notice here, in the earliest stage of the organization of the cortical cellular elements of neuroblasts, an apparently similar picture of the cells and their appendix in the precentral and optical regions. Still, it is not difficult, even to the naked eye, to notice, already in this stage, the differences in the shape of the cells and the characteristics of their appendices.

Fig. 6 represents the organization of the cortical structure in an embryo of 5½ months. To the left is the cortex from the precentral region; to the right, from the postcentral region. Here the difference in the shape of the cells, and particularly in the shape of the appendices, seems even more distinct.

The next differentiation of these connexions in an embryo of 8 months is of great interest with regard to those of the cortical structure. In Figs. 7 and 8 are shown the formation of the intercellular connexions of the frontal, lower-sinciput, and postcentral regions. One notices very fine cellular appendices of extraordinary multiformity and peculiarity in the three regions of the cortex in the embryo of 8 months; in the frontal region (precentral and motorial), strongly developed cells with significant vertical appendices. Contrary to this, the cells in the postcentral, and especially in the lower-sinciput (associatory), region of the cortex are considerably smaller and at the same time their appendices are distinguished by greater delicacy and multiformity. And, what is most important, they are distinguished by significant appendices extending laterally—i.e., in a horizontal direction—which obviously is largely

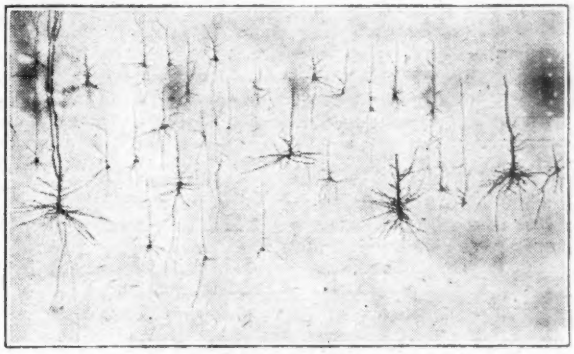

FIG. 7.—Eight-lunar-months foetus. Precentral agranular cortex (area 4).

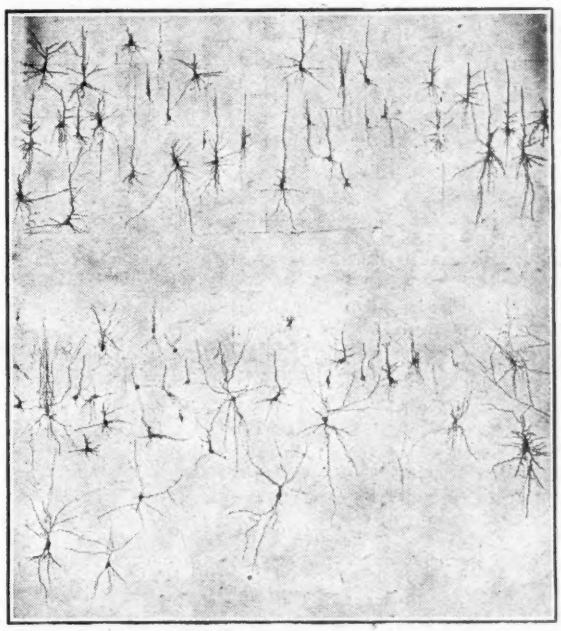

FIG. 8.—Eight-lunar-months foetus. Middle part of the cross-section of the cortex. Above, lower parietal area 39; below, postcentral area 1.

characteristic of the receptive type of cortex. These fine neuron formations are obviously best distinguishable in the last month of uterine gestation.

Conclusion

I shall not dwell here on a full description of all the details of this amazingly diverse picture of the cellular structures and their appendices. They will be dealt with separately by Dr. Polyakov. Particularly important are the examination and the establishment of these structures in the adult. The examples given above convey some idea of the new data concerning the finest and most complicated structural features of the cerebral cortex. There is no need to prove that on these data the processes of the cerebral cortex in the normal and pathological state are based. Can one doubt the intimate physiological part

which these minute intercellular formations play? Can one doubt that in various pathological affections of the brain as a whole, and of the cerebral cortex in particular, these delicate intercellular structures are the first to be exposed to disease, being the most vulnerable? Of special interest are these data from the point of view of pathological changes of the brain in the so-called "functional diseases" of the nervous system. Obviously, in various "functional diseases," and also in many cases of psychosis, where we are not in a position to identify definite changes in cellular structure, one must assume first of all an affection of these intercellular connexions. The examination of these amazingly fine and diverse structural formations of the cortex presents us with more problems, the resolving of which is one of the chief tasks of modern neurology and neurophysiology. The work of the research staff of the Moscow Brain Institute is dedicated to the study of these questions.

Summary

The classical method of Pavlov in conditioned reflexes enriches considerably our knowledge and understanding of the part which the cortex plays in the most differentiated nervous activity and of the connexion of the cortex with the functions of the inner organs. The novel method of bio-electrical currents, and the exploration of the finest morphological structures of the cortex and its intercellular connexions, open new ways and opportunities for establishing the laws governing the fundamental morphophysiological mechanism of the complicated activity of the cerebral cortex.

DERMATITIS FROM WEARING ARMY SPECTACLES

BY

W. O. G. TAYLOR, M.B., Ch.B., D.O.M.S.

Major, R.A.M.C.; Ophthalmic Specialist

AND

A. G. FERGUSSON, M.D., F.R.F.P.S.

Major, R.A.M.C.; Specialist in Dermatology

WITH

SPECIAL REPORT BY

W. R. G. ATKINS

Lieut., R.A.M.C.; R.A.M. College

Although dermatitis due to the dye in artificial-shell glasses is fairly well known (Thistlethwaite, 1943; Gray, 1943) there has been little mention of a similar dermatitis resulting from the wearing of spectacles with metal frames, since its inconvenience is easily avoided under normal civilian conditions. Between December, 1941, and March, 1942, six cases of such a condition were seen by us at a military clinic in Scotland.

The Army spectacle frames (Mk. III) are made of "nickel silver" plated with nickel. Nickel silver has the advantage of useful corrosion-resisting properties; it is an alloy of nickel, copper, and zinc in the following proportions:

Part of Frame	Nickel	Copper	Zinc
Bridge	25%	60%–65%	10%–15%
End-pieces	25%	60%–65%	10%–15%
Cables	12%	60%–65%	23%–28%
Eye-wires	12%	60%–65%	23%–28%
Butts	10%	60%–65%	25%–30%

After manufacture the frames are given a solid nickel plating. It will be noted that the percentage of copper does not vary: the physical properties of ductility, hardness, etc., depend on the relative proportions of nickel and zinc. Common impurities—sulphur, lead, iron, and mercury—are all harmful in the alloy, and to avoid them the raw materials used in the casting consist only of pure nickel, electrolytic copper, and electrolytic zinc. Samples of each of these substances as well as the alloy, and alloy finally plated with nickel, were supplied by the metallurgists for the purpose of a patch test.

The physical state of the metal is of some interest. In the first place the raw material used is dead soft and therefore in an amorphous state. In the case of the eye-wires this condition is not greatly changed, as the only process is that of rolling and cutting. However, in the case of all other components, striking and reducing operations are carried out, and the metal must therefore be in a more or less crystalline state as a result.

A study of dermatological literature shows that dermatitis is not uncommon in the nickel industry (Blaschko, 1889; Landsteiner, 1924; Bulmer and Mackenzie, 1926; White, 1928; Jadassohn and Schaaf, 1929; Stauffer, 1931; Goldman, 1933; Stewart, 1933), but the first mention of sensitivity to spectacle frames containing nickel seems to be that of Lain (1931), followed by Fox (1933), Urbach (1935), Kristjansen (1937), and Löwenstein (1938).

Lain describes three cases of dermatitis occurring on the temples and ears of men wearing spectacles. In each case the frames were made of so-called "white gold," reported as an alloy of gold, copper, and nickel. In his first case the eruption occurred also across the bridge of the nose, but in the other two the bridge of the spectacles was of a different metal, and the eruption occurred only on the temples and ears. On his inquiry, the optical company manufacturing the glasses instituted a research in their laboratory and reported as follows:

"The trouble seems to be due largely to nickel that is found in white gold alloy. We believe that the action is largely electrolytic; that is, an electrolytic battery action is produced when there are dissimilar metals and an acid (or in some cases an alkaline) fluid is present and in contact with these dissimilar metals. When the perspiration, which is an electrolyte, acts upon the base, metal salts are formed, and such action is more pronounced in the presence of heat. It is probably a salt of the nickel that causes the irritation, which seems to be analogous to a trouble that is present in the nickel-plating industry called commonly 'nickel itch.'"

The case quoted by Fox (1933) was sensitive to both spectacle frames and a wrist-watch made of this white gold.

Goldman in 1933 surveyed the literature up to then and added two cases (not due to the wearing of spectacles) in nickel-workers. Citing the cases of Lain and Fox, he suggests that, in spite of strong presumptive evidence, the failure to perform eliminative patch tests had not positively incriminated the nickel. Both his cases gave a history of previous allergic disturbances (urticaria and hay-fever). Both gave strong responses to patch tests with nickel but negative to the closely allied metal, cobalt, thus showing a strong specificity to the nickel. This specificity, associated with the abnormally short latent periods in his cases (2 days and 3 days) before the appearance of the intolerance, suggests that the hypersensitivity may have been gained by: (1) inherited or congenital idiosyncrasy; (2) exceptionally rapid sensitization (the normal interval is 8 to 10 days); or (3) repeated brief contact with the metal (perhaps as nickel coins or suspender buckles) without appreciable clinical manifestation—the so-called "silent sensitization." Urbach (1935) described a case of sensitivity to nickel-framed spectacles. A patch test with an Austrian schilling, which contains a large percentage of nickel, gave a positive reaction. As the schilling contains other metals, this is of course insufficient as an eliminative test

That this is not a very infrequent problem when the wearing of nickel-framed spectacles is necessary is shown by the fact that six cases were seen by us in a small area within three months and that similar cases (Bettley and Lyle, personal communication) have occurred in other parts of the country.

Case 1

Pte. H. G.; Pioneer, aged 31; single. Received glasses Jan. 1941: myopia, −9.00 dioptres. Within a month a reddish patch developed where the spectacles touched the skin. After a time wearing the glasses for 5 to 10 minutes caused recurrence after a latent period of 15 to 30 hours. Since in spite of treatment it kept recurring on resumption of the spectacles, he was referred to us.

Examination on Dec. 2 revealed vesicular eczematous dermatitis wherever the spectacles touched the skin—behind the ears, over the temples and zygoma, on cheeks eyebrows, and sides of the nose where the pads touched. There was no history of drug sensitivity or other allergic phenomena. Mild pityriasis sicca capitis was present.

Treatment.—The skin healed with calamine lotion, but only when the spectacles were left off. A patch test was performed in the interscapular area with part of the frames, and gave a marked positive reaction in 48 hours. A control patch was negative. The following expedients were then tried: (1) A new pair of glasses: skin broke down in six hours. (2) Zinc adhesive plaster applied over parts of frames in contact with skin: lesion recurred. (3) Cellulose acetate varnish painted on to frames: successfully prevented recurrence, but started to peel off within four days. (4) Cycle-tyre valve tubing pulled over flexible ear-curls and pads, xylonite half-

rings ("washers" in optical trade) clipped over rims, and jaconet covers stitched over flat sides. This final attempt was highly successful, and the covering could easily be renewed when worn out.

Further patch tests were now carried out with the elements of the alloy received from the metallurgists.

Test Patches	24 hours	48 hours	72 hours	96 hours
Pure nickel	−	−	+	++
Nickel silver alloy	−	+	++	+++
Copper	−	−	+	+
Zinc	−	−	−	−
Plaster control	−	−	−	−

The copper test, repeated 10 days later, was then negative. On March 23, 1942, the Prausnitz-Küstner reaction was carried out on Cpl. B. (a volunteer test subject), and was negative to both nickel and nickel alloy.

Case II

Gnr. A. B., aged 38, married; Army and civil occupation, clerk. At school he was unable to wear metal-framed spectacles owing to "breaking down of the skin": no trouble with shell frames. Refractive error small, but finds glasses essential to his work as a clerk. While in France in 1939 he was provided with Mk. III spectacles. Within three days he felt an itching of the skin in contact with the frames. Soon it became reddened and moist, and began to peel. This stopped as soon as the glasses were left off. There was no history of allergic illness or skin disease. Examination on Dec. 8, 1941, revealed a condition similar to that in Case I. There was no other skin lesion. A patch test with a portion of his own spectacle frames gave a weak positive result. On discarding the glasses the skin on the face healed within seven days.

This man also had a trial of the cellulose enamel treatment to his spectacles, but it began to wear off even more quickly (24 hours), so a pair of frames were covered as in the final experiment in Case I, with equal success.

Case III

Gnr. N. H., aged 32; married. Army occupation, driver; civil occupation, machinist (costumes). Received Mk. III glasses Oct., 1941: myopia, −1.50 dioptres. The second day after wearing these the skin began to break—owing, he thought, to friction, as the glasses fitted rather tightly. Not until the next day did it become inflamed, starting with a burning pain and itching. He then left the glasses off and the skin healed after three weeks. Later, when on guard duty, he was ordered to wear them, and again the skin broke down after only two hours. There was no history of allergic disturbances, or skin disease except boils, nor was he taking drugs of any description.

On account of the abnormally wide distance across the forehead the fit of the glasses was not good. The dermatitis, distributed as above, was a vesicular eczematized condition with slight secondary infection. There was also slight pityriasis sicca capitis with comedones. The glasses were withdrawn: no treatment was given, and when he returned in 20 days the skin was quite healed. The fit was then very carefully adjusted to avoid all friction, but once more the lesion recurred after six hours. Patch tests were then carried out with portions of frames from each of three manufacturers:

Test Patches	24 hours	48 hours	72 hours	96 hours
Frames "A"	−	−	doubtful	+
" "B"	−	−	"	+
" "C"	−	−	"	++
Plaster control	−	−	−	−

In view of the low refractive error it was considered that this was an ideal case for fitting with "respirator wafers" (Taylor, 1944), which give correction during the wearing of the respirator. At other times he was allowed to wear shell frames.

Case IV

Cpl. R.; Pioneer, aged 37; married; civil occupation, slater. Moderate myopic astigmatism. Received Army glasses in Aug., 1941, and wore them constantly with no trouble for about three or four weeks. First noticed a soreness over the bridge of the nose; then the skin broke and began to weep. Soon the eyebrows were involved, followed by the skin over the temples and behind the ears. The fit of the glasses was always good. Treatment with ointment had no effect, and calamine lotion also failed to cure, although it kept the lesion in check. He returned to the specialist who had prescribed the glasses, and was advised to wear his shell frames and leave off the Army pair. The skin then healed within three to four weeks, using only calamine lotion.

When examined by us on Feb. 1, 1942, after wearing metal glasses again for a few days, he had pityriasis sicca capitis and also a mild seborrhoeic eczematoid condition of forehead and cheeks. Treated with skin paste, this cleared up rapidly, revealing an underlying and resistant spectacle dermatitis. The glasses were removed, and in three days the skin healed. There was no history of allergic disease, nor was he taking any drugs. He had not previously worn white-metal frames or a wrist-watch. Patch tests as in Case III.

Test Patches	24 hours	48 hours	72 hours
Frames "A"	−	−	+
" "B"	−	−	+
" "C"	−	−	+
Plaster control	−	−	−

A trial was made of the cellulose varnish, but within a day it was already starting to peel off, so the frames were covered as in Cases I and II. After wearing these for a month there was no recurrence.

Case V

Cpl. W. M. S., aged 26; married. Army occupation, M.O.'s clerk; civil occupation, schoolmaster. Mk. III glasses prescribed Dec. 10, 1940: low myopic astigmatism. At first, when these were worn only once a week for an hour during the gas practice period, no trouble was experienced. In May, 1941, he started to wear them constantly, and after six days the skin in contact with the frames began to discharge and the pads stuck to his nose. There was slight itching. When the spectacles were discarded the lesion cleared up in one or two days, but each time they were worn again the trouble recurred. He had not previously worn white-metal frames or a wrist-watch.

On Feb. 9, 1942, after wearing the glasses for five days, there was mild weeping and desquamation. No seborrhoea was present, and there was no history of other allergic disturbance or previous skin disease. He was not taking drugs of any sort. The skin actually healed without any treatment while under observation and while the same glasses were in occasional use, although adjusted so as to have little contact with the skin except behind the ears. Patch tests were carried out as follows:

Test Patches	24 hours	48 hours	72 hours
Frames "A"	−	doubtful	doubtful
" "B"	−	"	"
" "C" (nickel worn)	+	+	+
Plaster control	+	+	+

In view of these equivocal results and the behaviour of the lesion while under observation one wonders whether in the course of his Army occupation he had learned of this condition and perhaps caused an artefact. In any case, special correction did not seem necessary, and he did not return.

Case VI

Dvr. T. T., aged 32. Army glasses had been prescribed about a year previously. There was no trouble until after six months, when the skin over the bridge of the nose, around the ears, and over the temples broke down. It did not heal until he changed to his reserve pair. Thereafter it remained well until four days before we saw him. Examination on March 1, 1942, showed an eruption similar in appearance and distribution to the previous cases. Seborrhoea was well marked, and pityriasis sicca capitis and a tendency to comedo formation on the skin of the forehead were present. There was no history of skin disease or of previous allergic phenomena, nor was he taking drugs of any kind. The glasses were seen to be roughened, and the nickel plating was worn off over a large area; they were therefore withdrawn. In a week the skin had completely healed without other treatment. Patch tests were carried out.

Test Patches	48 hours	72 hours	96 hours
Nickel silver	−	+	
Alloy plated with nickel	++	++	
Zinc	−	−	−
Copper	−	−	−

The Prausnitz-Küstner test was performed, the result being negative to both the nickel silver and the plated alloy. On March 23 he was fitted with frames covered as previously described. In September he returned when the frames required renewal of the rubber tubing. There was a slight recurrence where the metal had come into contact with the skin, but otherwise he had remained perfectly well.

Discussion

These cases are clearly similar to those of Lain and Fox. What is the mechanism of this disorder? (1) It may be mechanical (artefact, roughness of metal parts, bad fit, or roughening of parts during adjustment with pliers). (2) It may be due to an ingested substance which can interact with the metal—sulphur, mercury, etc. (3) It may be an allergic phenomenon.

That our cases were not due to mechanical causes is shown by the fact that the fit was never a matter for complaint (except in Case III; and here, after great care had been taken to secure

a perfect fit, the intact skin broke down within six hours). Careful observation, in addition to the various patch tests, eliminated the possibility of artefact, except perhaps in Case V.

In every case except No. II careful inquiry was made as to the taking of any drugs such as sulphur or mercury, and it appeared that none of the patients was taking even a purgative or was under treatment for syphilis.

There remains the possibility of an allergic or pseudo-allergic cause. To incriminate the spectacle frames as a cause of an allergic skin response one must inquire: (1) Can the metal become ionized under conditions of wear? (Woods, 1933; Landsteiner, 1924.) (2) Do the history and mode of onset suggest allergy? (3) Does the lesion clear promptly on removal of the frames? (4) What is the response to specific patch tests? (5) Can this specific hypersensitivity be transmitted? (Prausnitz and Küstner, 1921.)

Lain quotes a company of manufacturing opticians who, after research, stated that they believed there was an electrolytic battery action between the dissimilar metals of the alloy in the presence of perspiration and aided by body heat.

Specimens of the frames were submitted to Lieut. Atkins, who reports as follows:

"The specimens were washed in absolute alcohol to remove traces of grease and then placed in distilled water, slightly acid as it always is, for several days. There was no trace of nickel by the most sensitive tests, and the surface remained bright. With sodium chloride in the water, between 1% and 2%, there was, however, slight reaction, so that after two or three days there was a marked pink with dimethyl glyoxine and ammonia with specimen 'C,' a definite but lesser pink with specimen 'A,' and no perceptible pink with specimen 'B.' It is possible that there would be still greater reaction if a complete frame was tested, due to one side being electronegative to the other. In this case the dermatitis might be earlier and more marked on one side. It is also obvious that this reaction requires the intermediary of sweat."

It will be noted that all the cases except II and V suffered from pityriasis sicca capitis, and all reported that they sweated very easily. The wearing of a respirator of course induces free perspiration under the rubber. In only one case was an inequality in the dermatitis noted—the worst case, No. III, in which the left side was earlier and more severely affected.

With regard to the second requirement, all these cases conform to the allergic types, with the exception of the doubtful case, No. V. Case II is the only one with a history of a previous intolerance, which explains the short latent period here. Case III also, with a brief latent period, had a breaking of the skin *before* the burning and itching, and may be explained as the mechanical effect of a bad fit which later became a true allergy, since, in the absence of mechanical irritation, the intact skin broke down in six hours. It does not seem necessary in any of these cases to appeal to the "silent sensitization" mentioned by Goldman, although the number of objects of everyday use which contain nickel is adequate—coins, badges, buttons, plumbers' fittings, parts of motor-cars, as well as the E.P.N.S. forms of tableware and cutlery.

The third requirement is fulfilled, since all cleared up promptly, only the most severe case taking more than a week to do so.

The response to specific patch tests is, as Goldman suggests, the vital test to detect the specific cause, and the results shown above strongly support the hypothesis that the nickel silver is the cause of a specific hypersensitivity. The tests were carried out with the standards laid down by J. Jadassohn and Bloch. Various tests were performed. Cases I to V were all patch-tested with a portion of the actual frames worn, and all were positive. Cases III, IV, and V were tested with portions of frames made by each of three different manufacturers. The results reveal no significant variation. Cases I and II were patch-tested with the separate elements of the alloy, and showed no reaction to the copper and zinc, but some reaction to pure nickel; there was a marked reaction to the alloy itself. The Prausnitz-Küstner reaction was tried in Cases I and VI. Both were negative. It is possible that the injected individuals did not perspire sufficiently.

Finally, a word might be said about occupational causes, but the wide variation in the civil and military occupations seems to rule this out.

Treatment

The occurrence of six cases in a short period of time from a fairly small group makes the question of treatment an important one from the military point of view. It is obvious that desensitization is too slow and uncertain a procedure for military use. The various methods employed by us have been discussed; it only remains to mention that rhodium and chromium plating proved a failure (Bettley and Lyle, personal communication, 1941).

From all points of view the most satisfactory solution was the adoption of the correcting wafer applied to the respirator eyepiece for use during gas attacks and of gold or shell frames at other times. When the refractive error is too high for satisfactory correction by a wafer the best expedient is to cover the frames in the manner prescribed for Case I. This involves only the use of easily obtained materials, and can be renewed by the soldier himself. It does not affect the gas-tightness of his respirator.

Summary of Conclusions

We conclude that dermatitis arising from the use of Army spectacles is an allergic phenomenon resulting from a prior electrolytic battery action which ionizes some of the nickel in the presence of the acid sweat and dissimilar metals, aided by the body heat.

Our acknowledgments and thanks are due to Brig. Sir Stewart Duke-Elder, K.B.E., for his interest and assistance in obtaining the cellulose varnish; to Brig. R. Cormack, O.B.E., D.M.S., E.A. Command, for permission to publish; and to Col. (now Brig.) W. K. Morrison, A.D.M.S., West Scotland Area, for permission to carry out the experimental part of the investigations.

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CEREBRAL FAT EMBOLISM AFTER ELECTRICAL CONVULSION THERAPY

BY

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Electrical convulsion treatment is rightly regarded as the safest of the shock methods available so far. Only a few fatal accidents have been reported in the literature (Alpers and Hughes, 1942; Ebaugh, Barnacle, and Neubuerger, 1943; Napier, 1944). The last-mentioned author described 5 cases, which he considers to be the only deaths in England and Wales; in none of them had a microscopical investigation of the C.N.S. been carried out. According to Alexander and Löwenbach (1944), three possible mechanisms may account for the fatal outcome. The first is direct action of the electric current upon the brain tissue through which it passes, resulting in vasoconstriction and blanching of the tissue. They demonstrated this in animal experiments, but to obtain this effect shocks were necessary which in amperage, duration of flow, and density of current far exceeded those used in electric-shock treatment in human patients. The second mechanism is excessive stimulation of the vago-vasomotor centres of the medulla, causing generalized circulatory disturbances. This mechanism becomes operative only if the electrodes are placed in too posterior a plane, allowing the current to flow through the hind-brain. It is conceivable that some of the conflicting experimental results in animals

could be explained in this way. The third group is concerned with patients whose impaired cardio-circulatory-respiratory system cannot stand up to the excessive demands imposed by a convulsion.

The present case does not fall into any of these categories. It showed pathological changes which are of some practical and theoretical interest, and for this reason its publication seems to be justified.

Case History

The patient, a man aged 53, was admitted to Springfield Hospital as a certified patient on March 31, 1944. He had recently taken 108 aspirin tablets, as he thought he was being followed by hundreds of plain-clothes detectives. His physical condition was good. He had sustained gunshot wounds at the back of the right knee during the war of 1914–18, and now complained of severe pain in this knee, with inability to straighten the leg. The local lesion did not appear to be entirely responsible for this disability, and, indeed, under sodium amytal and suggestion therapy the patient was able to walk about freely without pain. Prolonged somnifaine narcosis was given from April 30 to May 15, but no lasting improvement resulted. Psychotherapy and occupational therapy were continued until December.

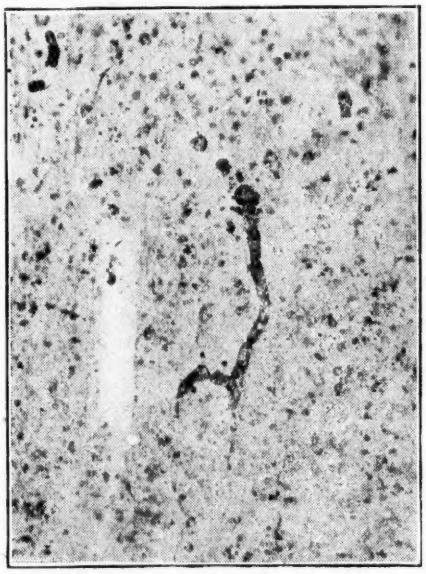

FIG. 1.—Frontal cortex. Scharlach R stain. (×130.)

At 10.10 a.m. on Dec. 5 an electric convulsion was instituted by a standard commencing strength of 120 volts alternating current for 0.3 second. After a latent period of one second a very strong fit lasting 55 seconds resulted. He made a fair recovery and was able to answer questions, but was pale and restless and complained of pain in the back. At 10.30 a.m. he collapsed and was given first 5 c.cm. and then 4 c.cm. of nikethamide. He improved and was able to take some tea at 11 a.m. He vomited the tea, and at 11.45 a.m. more nikethamide was given with intranasal oxygen and carbon dioxide. Again there was a slight improvement, but he collapsed at 12.45 p.m., and from that time remained unconscious, pale, and restless. Respiration was rapid and the pulse rapid and thready. At 3 p.m. his blood pressure had dropped from 148/90 to 110/90, and a pint of reconstituted blood serum was given slowly with 5 c.cm. of nikethamide. His condition steadily deteriorated and he died at 10.50 p.m. the same day.

Post-mortem Examination.—The body was well nourished. There were no external burns or abrasions. Two old scars were seen behind the right knee; they were superficial and not attached to deeper structures. A careful examination of the spine, ribs, pelvis, and skull failed to reveal any fracture. There was no bruising, deformity, or crepitus to suggest a fracture in any of the long bones. The meninges were congested; several small petechial haemorrhages were seen in the midbrain and in the frontal regions. Apart from congestion, which was most pronounced in the lungs, there was no significant macroscopic change in the other organs. Only the brain was sent for histological examination to the Central Pathological Laboratory.

Histological Investigation of the Brain.—Numerous blocks from all regions were examined by the usual neurohistological methods. No significant pathological changes could be demonstrated with methods which stain nerve cells, nerve fibres, and the glia. No petechial haemorrhages were seen in any of the slides, which indicates that those noticed macroscopically were only few in number. There was, however, a considerable degree of congestion of all capillaries and veins. The fat stain revealed a surprising change. As Figs. 1–3 unmistakably show, many capillaries were blocked by fat emboli. These fat emboli occurred to a varying degree in all regions of the brain, including the cerebellum. They were more frequent in the grey matter than in the white.

Discussion

The diagnosis of cerebral fat embolism is established by the histological evidence and also clinically suggested by the so-called "free interval"—although it was not entirely free of

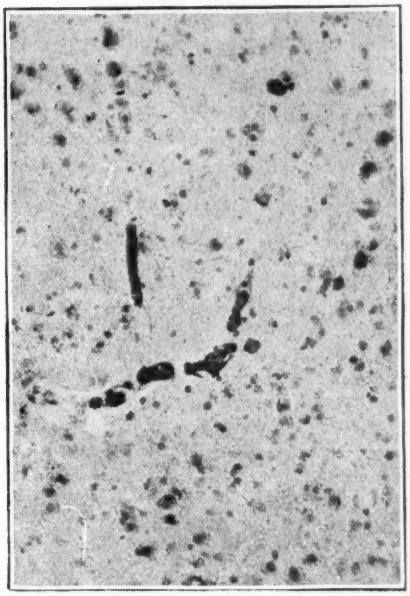

FIG. 2.—Occipital cortex. Scharlach R stain. (×130.)

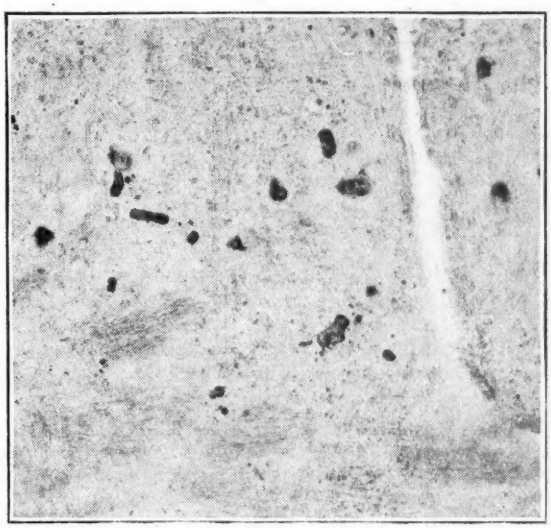

FIG. 3.—Medulla. Scharlach R stain. (×120.)

symptoms and there is some doubt whether it ended with the first collapse about 20 minutes after the convulsion or with the second final collapse about two hours later. The characteristic petechial haemorrhages of the skin were absent; in the brain only a few were encountered.

Cerebral fat embolism has not yet been described after electrical convulsion treatment. It has been found, however, by Nightingale and Meyer (1940) in a patient dying after shocks produced by triazol, and by Nielsen and Ingham (1940) after treatment with leptazol (cardiazol). In the last-mentioned case fractures of both femora were responsible, while in Nightingale and Meyer's case no fracture was noted, although a vertebral fracture could not be excluded. In the present case the patient complained of backache, but despite careful post-mortem search no fracture of the limbs, spine, or any other osseous

part of the body could be detected. It is therefore necessary to consider other possible causes of fat embolism.

Apart from fractures, widely recognized causes of fat embolism are severe contusion, deep laceration of skin, severe burns, operations on adipose persons, and forceful orthopaedic manipulations (Strauss, 1933). Concussion as a causative factor has been recognized for 70 years (Robb-Smith, 1941a), and its significance has been stressed also by Silverstein and Konzelman (1940), but it should be remembered that most of the evidence is of an experimental nature (Strauss, 1933). The claim made by Robb-Smith (1941a) that blast alone may cause fat embolism has not been confirmed by subsequent authors (Zuckerman, 1941), but, if found, it should be regarded as a complication.

Convulsions and violent exertion during certain types of psychoses such as delirium tremens are occasionally mentioned as a possible cause of fat embolism (MacCallum, 1936), but the fact that fractures are more often produced by epileptic convulsions than was known in the past tends to qualify the significance of these older views. We were unable to trace any reference to this point in modern neurological treatises. One of us (A. M.) has investigated five brains from epileptics dying suddenly during or after convulsions. In four of these he failed to find fat emboli in the bodily organs, including the brain. Occasionally intravascular substances staining light pink with Sudan and usually not occupying the whole lumen of the vessels were encountered. They were also found, however, in other conditions, including carbon monoxide poisoning and tuberculous meningitis. These lipoidal substances, whatever their significance may be, are not likely to be of an embolic nature. It is possible, however, that they may have been confused with fat emboli by earlier investigators. Only in one case of death after epileptic convulsions was true fat embolism of the lung and, to a lesser degree, of the systemic circulation found. This was in a patient suffering from lipoidosis of the Hurler type (gargoylism).* The liver and spleen were enormously enlarged, and contained an abundance of fatty substances, which may have been an important facilitating factor, just as the danger of fat embolism is increased in operations performed on adipose persons.

Opinion is still divided on the role of the blood lipoids in the formation of fat emboli. The most fully substantiated instance of haemic origin appears to be alkali poisoning (Robb-Smith, 1941b), followed by either hyperlipaemia or lipoproteolysis. Macfarlane, Oakley, and Anderson (1941) were able to produce *in vitro* free fat from blood to which *Cl. welchii* toxins had been added. Winkelman (1942), surveying previous experimental evidence, seems to favour the haemic hypothesis in view of the presence of large amounts of fat in the lungs and brain following mild injury or fracture of the smaller bones of the body, which are not likely to release a supply of free fat sufficient to cause widespread embolism. It is interesting that hypercholesterolaemia occurs in a large proportion of cases submitted to electrical convulsion treatment as well as after spontaneous convulsions (Katzenelbogen, Baur, and Coyne, 1944).

At the present stage of our knowledge it is impossible to say which of the factors surveyed above has been operative in our case. Although there was no evidence of a fracture of bone or contusion or laceration of other fat deposits of the body, it must be admitted that an unobtrusive mild fracture or any other of the common sources of fat embolism might have been overlooked. So far, this case should be regarded as an exceptional complication of electrical convulsion therapy.

In reporting the above case it is not our intention to point out any increased risk associated with this form of shock treatment. It is well, however, in future post-mortem investigations of sudden and unexplained death after electrical convulsion therapy, to keep the possibility of fat embolism in mind, particularly if a fracture has been produced. One of us (D. T.) has made a previous observation of death produced by electric shock treatment: the patient was a female schizophrenic aged 42. During the first treatment a current of 130 volts, lasting 0.3 second, was given after lesser applications had failed to produce a convulsion. The fit lasted 58 seconds. After 3 hours the patient was still unconscious. At intervals until she died, 19½ hours after the fit, she almost regained consciousness. At the necropsy no injuries, burns, or fractures were found. There was acute pulmonary oedema throughout the lungs. The liver was slightly fatty, the uterus was absent, the meninges were congested, and the brain was macroscopically normal. No histological investigation was carried out.

The absence of a free interval before the onset of the terminal symptoms militates against the diagnosis of fat embolism in this case, although atypical cases have been recorded. Excessive vago-vasomotor stimulation (the second group of Alexander and Löwenbach, 1944) might be an alternative explanation.

* This case will be published in full, together with two other cases affected by the same condition.

Summary

A case has been described in which sudden death after electrical convulsion therapy was caused by cerebral fat embolism.

Neither a fracture nor any of the other recognized causes of fat embolism were found post mortem. Other possible causes of fat embolism have been considered, but no final decision is justified at the present moment. The problem calls for special clinical and pathological attention in similar cases.

We wish to thank Mr. J. W. Hulme, Assistant Deputy Coroner, Southern District, County of London, and Mr. H. G. Broadbridge, Coroner for the Western District of Middlesex, for permission to publish the case. We are also indebted to Dr. J. H. Ewen, medical superintendent, Springfield Hospital, and Dr. C. Friedman for additional clinical data. The histological slides and photomicrographs have been prepared by Mrs. E. Beck.

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PELLAGRA IN A MORPHINE ADDICT

BY

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AND

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Quite apart from those areas where it is endemic and due to inadequacy of the local diet, or where it is associated with alcoholism (Deeny, 1942), pellagra has been recorded in a variety of conditions interfering with digestion and absorption. It is not uncommon in chronic psychotics and in cases with peptic ulcer—classes of patient who may limit their diet voluntarily. Cases in which morphine appears to have been the chief factor are rare (Bean, Spies, and Blankenhorn, 1944). We therefore record the following instance.

Case History

The patient, the widow of a medical practitioner, was said to have been a morphine addict for 12 years. She took the drug in the form of 1/3-gr. tablets hypodermically—at one time as many as 20 a day. Latterly she had taken only 12 a day. In one particular week she had taken 200 tablets. The usual amount was about 100 a week. She also took large quantities of aspirin. There was a history of dyspepsia but no radiological evidence of peptic ulcer, and it is certain, in view of her behaviour, that her frequent complaints of pain were efforts to obtain morphine.

Since the addiction developed she had taken little food. She ate no vegetables and little fruit. Occasionally she ate a lamb chop, but no other meat, no milk (except in coffee), and no eggs. Her diet consisted almost exclusively of white bread and butter, a little cheese, a little bacon, tea, and marmalade. She became very thin, in contrast to her former plumpness.

She had had attacks of diarrhoea at intervals for three years. These were controlled "only by morphia." She had had brown patches on her skin off and on for years, and used to be distressed

about their unsightliness. They did not irritate, and they showed the usual seasonal variation. Since taking morphine she had been very moody—easily excited, then depressed. She rarely went out, and often made scenes—screaming, etc.—when the morphine allowance was finished. Her son dreaded coming home. She was admitted to the observation unit, St. Alfege's Hospital, on Aug. 7, 1941. She was pale, and the typical brownish branny patches on her skin stood out in contrast. In general the exposed areas were pigmented. There were particularly well marked pigmented patches over the manubrium sterni and nape of the neck, disposed "necklace" fashion, also on the backs of the fingers, wrists, and insteps. Her tongue was pale and very smooth. There was no fur, despite the poor appetite and the fact that she had taken so little food before admission. Her blood pressure was 110/70. There was gross oedema of the ankles

All tendon-jerks were absent. The patient said that they had been absent for years. She did not display the classical pellagrous dementia. Cerebration was quick and fairly accurate. She was hypochondriacal, and would resort to any device, from violence to wheedling, to get morphine. She was very self-centred. The blood Wassermann reaction and Kahn test were negative. A barium meal showed evidence of "gastritis" (thickening of rugae), with poor gastric tone and some initial delay followed by rapid emptying. No ulcer was demonstrated.

Progress.—The patient remained at St. Alfege's Hospital for 11 days, improving considerably and putting on weight. She had been extremely emaciated, with deep-sunken eyes, but at the time of her transfer had filled out considerably. No morphine was given, and after the first day no sedatives, although her craving persisted and she became very depressed when refused the drug. However, she soon became more reasonable and co-operative, and was willing to discuss other subjects than sedatives. On Aug. 18 she was transferred to Bexley Hospital, where a blood count showed Hb 44%, R.B.C. 2,430,000, C.I. 0.9. The patient was given large doses of iron and liver extract. Subsequent blood counts were as follows: Sept. 23—Hb 48%, R.B.C. 3,390,000, C.I. 0.71; Dec. 3—Hb 88%, R.B.C. 5,000,000. She was given nicotinic acid in 50-mg. doses six times daily, and thiamine in 50-mg. doses twice daily subcutaneously to a total of 1.8 g. Shortly after transfer she collapsed and was very ill for a few days. On recovery from this attack her physical improvement was progressive. She developed a ravenous appetite. There was at first no mental improvement, but four months after the beginning of treatment the mental state also changed for the better, and by mid-January, 1942, she had improved strikingly. She was quick, lively, cheerful, and took an active interest in her surroundings and in plans for her future. She was much less pale and the branny patches had become less evident. She was able to get about well and had put on much weight. There was still some oedema of the ankles on exertion. She was discharged home on Feb. 7, 1942.

When visited 16 months later the patient was active, able to walk several miles, and could do her housework; but unfortunately she had not co-operated in out-patient treatment, and was receiving no vitamin concentrates. She had deliberately restricted her diet on account of dyspepsia, and was taking only the small priority ration of eggs and milk which she was allowed, together with a very little bread-and-butter. She again had slight oedema of the ankles and branny patches on face, neck, arms, wrists, and hands; and her memory, especially for names, was poor. She declared that she was not taking morphia or alcohol.

Discussion

It is clear that in this case, as in most cases of vitamin deficiency, there was evidence of shortage of more than one essential factor (Sebrell, 1940). The main pellagrous picture is attributable to a nicotinic acid deficiency, but the polyneuritis and the cardiovascular disturbance suggest a thiamine lack, and the anaemia may have been due to a shortage of iron or of pyridoxine (vitamin B_6 : Unna, 1940). The exact mechanism of causation cannot be determined with certainty, but the principal factor was probably the apathy and loss of appetite induced by morphine addiction.

The effect of morphine on digestion and absorption is complex. The secretion of digestive juices is diminished (Douthwaite, 1932; Edwards and Gunn, 1941), but the effect of this reduction is counterbalanced by a subsequent increase in the gastric secretion and by the fact that the food remains longer in the stomach and intestine. Thus there is no reduction in absorption attributable to the direct action of morphine. It does not therefore appear that direct disturbance of digestive function by the drug can have been a prominent factor in the production of pellagra.

A further possibility is suggested by the work of Shideman and Seevers (1941), which indicates that chronic morphine addiction and thiamine deficiency both produce the same sort of metabolic defect (characterized by a reduction of the normal increase in oxygen output from muscle following addition of pyruvate and co-carboxylase *in vitro*). Ellinger, Hassan, and Taha (1937) noted that dehydrogenases are inhibited by narcotics. This would not account for the pellagrous features of the above case, but might be partially responsible for the development of polyneuritis and oedema. The tendency, after cessation of therapy, to relapse without a return of the morphine addiction does not eliminate any of these possibilities, since, on the one hand, permanent metabolic changes may have been caused by the prolonged habituation to morphine, and, on the other, her diet after discharge was probably inadequate.

Summary

A case of pellagra in a long-standing morphine addict is discussed. There were also polyneuritis and anaemia. Great improvement occurred with treatment, followed by relapse on cessation of therapy. Loss of appetite due to morphine was thought to be the cause of the pellagra. (The possibility that morphine may disturb metabolism more directly is considered.)

Our thanks are due to Dr. Eli Davis, deputy medical superintendent, St. Andrew's Hospital, Bow, for his help in diagnosis and treatment of the patient and for his assistance in the compilation of this report.

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MALARIA EPIDEMICS AT EXCEPTIONALLY HIGH ALTITUDES IN KENYA

BY

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Malaria in tropical and subtropical countries is usually thought to disappear once a certain altitude is reached, though the accepted "safe" height varies from place to place. Six thousand feet is usually regarded as the upper limit. Manson-Bahr (1941) quotes figures for Abyssinia which indicate that the transmission of malaria in that country ceases at 6,600 feet, though doubtful records exist of cases of benign tertian malaria at Addis Ababa at 8,175 feet. Schwetz (1942) in a review of the African literature gives limits up to 5,000–6,500 feet.

Hitherto in Kenya Colony malaria was thought to be absent from places above 7,000 feet. In June, 1941, a small farming community at Londiani (7,500–7,800 feet) was suddenly stricken by a severe epidemic of the disease. On 12 of the 14 farms at least one European became infected between June and August, and on every farm cases of malaria were numerous among the African labourers. Blood slides taken from 35 ill Africans (of non-immune tribes, and long resident in the district) were examined, and 27 showed malaria parasites. Twenty-six of these infections were *Plasmodium falciparum*, and one was *P. vivax*. This represented only a small sample of the total number of cases. The European infections were malignant tertian with the exception of a single case of benign tertian.

The Londiani district (75 miles from the provincial centre, Kisumu) comprises a small township with an Indian bazaar and native location surrounded by European farms extending for a radius of about 12 miles. There was also at the time of the outbreak a large military camp sited at Londiani. Bordering the farms there are extensive areas of forest reserve in which live African squatters numbering several thousands. The epidemic particularly affected the farms and the military camp, though in the latter many of the cases may have been relapses from infections contracted elsewhere. It is interesting to note that little malaria occurred in the isolated huts of the forest squatters.

The epidemic came to an abrupt end in August, 1941. Smaller outbreaks occurred in 1942, 1943, and 1944, at the same season.

Many of the cases were severe because treatment was delayed, the reason for the delay being that malaria was not thought of in these cold highlands. In 1943 several cases with typhoid-like symptoms and nearly moribund were seen, and these were proved to be malaria only by finding rings and schizonts of *P. falciparum* in the blood. The same curious localization of cases occurred in the later years: in November, 1943, through the kindness of the military authorities, I was permitted to examine 300 Italian prisoners of war who had been resident for at least six months in the Londiani camp, and not a single one showed malaria parasites in the blood slides (thick drop preparations).

Much of the country at Londiani is vlei land, and in rainy weather becomes waterlogged, providing ample facilities for mosquito breeding. Dammed streams, quarry pits, roadside drains, and seepages are also common anopheline breeding-places. Table I gives the results of several mosquito surveys undertaken at Londiani.

TABLE I.—*Anopheline Mosquito Surveys—Londiani*

Date	Adults*	Larvae
Dec., 1927 ..	Nil	*A. garnhami*
June, 1936 ..	*A. gambiae* (6)	*A. natalensis* and *coustani*
Nov., 1936 ..	Nil	*A. natalensis* and *garnhami*
May, 1941 ..	*A. christyi*	Nil
July, 1941 ..	*A. garnhami* (2)	*A. christyi* and *squamosus*
Aug., 1941 ..	*A. christyi* (5)	*A. christyi* (403), *squamosus* (120), and *coustani* (90)
April, 1942 ..	*A. garnhami* (6) and *kingi* (2)	*A. christyi*, *squamosus*, and *natalensis*
May, 1942 ..	Nil	*A. gambiae*
July, 1942 ..	*A. gambiae* (3) and *christyi* (6)	*A. christyi* (319), *coustani* (15), and *garnhami* (4)
June, 1943 ..	*A. gambiae* (2), *christyi* (4), *garnhami* (5), *squamosus* (5)	*A. christyi* (7) and *garnhami* (39)
Jan., 1944 ..	*A. christyi* (2) and *natalensis* (1)	*A. christyi* (255) and *squamosus* (5)

* Adults were collected from native huts, cattle-sheds, and river-banks. All *gambiae* came from dwellings.

Of the seven species represented at Londiani only one—*A. gambiae*—is a known vector of malaria. The salivary glands of all the adults collected were examined for sporozoites, but no infections were found. (The glands of one *A. gambiae* were very heavily infected with leptomonads.) These surveys indicate that *A. gambiae* breeds for a short period about May and that adults persist during the next two months. Climatic records for Londiani are shown in Table II.

TABLE II.—*Climatic Records, 1941—Londiani (7,500 feet)*

Month	Rainfall in Inches	Temperatures* in Degrees F.		
		Mean Max.	Mean Min.	½ Max. Min.
Jan.	3·46	73	45	59
Feb.	1·00	76	46	61
March ..	4·56	76	50	63
April ..	10·22	75	50	62
May ..	8·78	73	49	61
June ..	5·47	70	47	59
July	11·01	67	47	57
Aug. ..	5·05	66	46	56
Sept. ..	3·36	70	46	58
Oct.	3·33	71	47	59
Nov. ..	6·35	70	47	59
Dec. ..	2·93	70	47	59

* 1941 temperature records are not available. These figures represent the mean of 1942, 1943, and 1944 observations.

In May, 1944, the extension of malaria into the highlands of Kenya went one step further. An epidemic of a fatal disease was reported on a farm about 20 miles to the north of Londiani at an altitude of 8,300 to 8,500 feet. Twenty cases (among 220 inhabitants) showing symptoms of headache, backache, shivering, and fever were examined and blood slides were taken. Previously one woman had died after six days' illness (during the second half of which she had been semiconscious). Eight cases showed *P. falciparum* (including one with gametocytes) in the blood, and of these eight, six were proved not to have left the farm for at least six months. The fatal case was probably due to cerebral malaria. Most of the sufferers were Africans of the non-immune Kikuyu tribe and lived in huts scattered on the slopes of the hills and down by the streams. A mosquito survey revealed the presence of numerous anopheline larvae (*A. christyi, garnhami,* and *ardensis,* but no *gambiae*) and two very worn specimens of *A. gambiae* (females) in huts. Suitable breeding-places for *A. gambiae* existed in the cattle- and pig-hoof prints in the swampy sides of the streams. The epidemic began about May 24, and the last case occurred on June 7. Malaria was apparently confined to this one farm; squatters living in the adjacent forests were unaffected. Climatic records of a B.E.A. meteorological station about 10 miles from this area and 500 feet higher are shown in Table III.

TABLE III.—*Climatic Records, 1944—Equator Station (9,000 feet)*

Month	Rainfall in Inches	Temperatures in Degrees F.		
		Mean Max.	Mean Min.	½ Max. Min.
Jan.	0·34	68	45	57
Feb.	0·67	71	46	58
March ..	2·48	70	47	59
April ..	3·85	66	48	57
May ..	5·07	66	47	57
June ..	2·66	65	46	56
July	3·86	60	47	53
Aug. ..	11·66	61	47	54
Sept. ..	6·19	63	47	55
Oct.	2·14	65	46	55
Nov. ..	4·53	64	47	55
Dec. ..	1·11	64	47	55

Temperatures on the affected farm were probably 2° F. higher.

Discussion

Malaria at these surprisingly high altitudes (7,500–8,500 feet) must be governed by three factors at least—the presence of human carriers, a range of rainfall and temperature suitable for the breeding of *A. gambiae,* and a temperature above the known minimum, to enable the parasite to develop in the mosquito.

The carrier problem is simple. Most farms employ large numbers of Africans who come from the malarious lowlands of the province, and these men, and more particularly the children who accompany them, provide a good source of gametocytes.

The climatic factors concerned in the breeding of *A. gambiae* are rainfall and temperature. This species is essentially dependent upon rainfall, and Tables II and III show that it is adequate at Londiani and at the Equator station. Various authors (De Meillon, 1934; Leeson, 1931) give a mean temperature of not less than 61° F. as the limit for *A. gambiae.* On the farm below the Equator station this temperature is reached in one month of the year only—in March—when the mean is 59°+2°=61° F. At Londiani, four months—February, March, April, and May—appear to be suitable, though the low rainfall of February invalidates that month for *A. gambiae* breeding. A sudden drop in temperature occurs in June, and this presumably inhibits further breeding until the rains and higher temperatures of the succeeding year.

Lastly, there is the sexual cycle of the parasite in the mosquito to consider, and if outside (shade) temperatures were alone to be reckoned with it is obvious that development could not occur. Wenyon (1926) states that a minimum *constant* temperature of 64.4° F. is required for *P. falciparum,* and at this temperature development probably takes three weeks at least. At the Equator station hourly readings showed that temperatures above 64° F. were attained for not more than two hours in the 24. At Londiani the mean temperature never reaches the critical figure. The answer to the problem is provided by the domestic habits of this species of mosquito. *A. gambiae* spends most of its life in human habitations—viz., small thatched huts with no windows or ventilation, with fires burning night and day, and overcrowded at night with people and goats. In such circumstances the temperature is 5 to 10° F. higher than that prevailing outside. This suggests that the mean temperature inside huts on the "Equator farm" was 59°+5° F., and at Londiani 61°+5° F., during the month of May. These figures just suffice for sporogony of *P. falciparum.*

The meteorological conditions are such that the survival of *A. gambiae* throughout the year is extremely doubtful in the case of Londiani and impossible in the case of the "Equator farm," and it is reasonable to assume that the mosquito is introduced annually by road or rail transport. Partial confirmation that the latter occurs is provided by the results of searches of trains arriving at Kisumu. Sixty-three *gambiae* were caught in the coaches in the years 1943 and 1944.

It is unlikely that Wynter-Blyth's (1943) explanation of the occurrence of malaria at exceptionally high altitudes in the

Nilgiris (6,300 feet) applies here. He suggested that warm winds blowing from below brought the mosquitoes up; here they would have to be blown 20 miles, up 4,000 feet, and through a narrow twisting valley, which is inconceivable.

A hypothetical diary of events of the epidemic on the "Equator farm," based on the above considerations, is as follows:

(i) Gravid *A. gambiae* were transported to the farm in motor vehicles coming by road from a malarious valley 20 miles below. *March.*

(ii) Eggs laid and first (and only) generation emerged. *Beginning of April.*

(iii) These adults bit African gametocyte carriers. *April.*

(iv) Sporozoites in glands. *About May 13.*

(v) Human cases. *May 24 to June 7.*

(vi) Death of last infected mosquitoes. *About May 27.*

Summary

Epidemics of malignant tertian malaria began for the first time in Londiani in the year 1941 and were repeated on a milder scale in succeeding years (May to July). The altitude of the locality is 7,500 to 7,800 feet. A few cases of benign tertian malaria also occurred.

In 1944 a localized outbreak of malignant tertian malaria occurred on a farm about 20 miles to the north of Londiani, at an altitude of 8,300 to 8,500 feet. It lasted for a fortnight only.

Anopheles gambiae Giles was found at both places, and is the probable vector.

Climatic records indicate that the breeding of this species is possible at 8,300 feet only during the month of March and at 7,500 feet only during March, April, and May.

Temperature records suggest that the completion of the sporogonic cycle is possible only because *A. gambiae* spends practically all its life indoors, where the temperature is several degrees higher than outside. The external environment is too cold for development to occur.

It is probable that *A. gambiae* is reintroduced annually by road and rail transport.

I have to thank the Hon. Director of Medical Services, Kenya, for permission to publish this paper, and Mr. J. O. Harper, Entomological Field Officer, for help in some of the mosquito surveys.

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Medical Memoranda

Mediastinal Emphysema and Bilateral Pneumothorax after Tracheotomy

The following case of complications after tracheotomy is thought to be interesting enough to be put on record.

CASE REPORT

Early on Christmas morning I operated on a little girl, 2½ years old, suffering from acute asphyxia; by 10 a.m. (10 hours afterwards) the child had died. The obstruction had come on quite suddenly the previous evening. There was marked retraction of the intercostal spaces and the suprasternal notch; the throat was injected, but no membrane was seen. The temperature was 100° F. The mother stated that there had been an alteration in the voice for some time.

Tracheotomy was performed in the usual way without undue haste under light general inhalation anaesthesia. The engorged veins over the trachea were ligated to preserve haemostasis; the layers of the cervical fascia were then incised—the pretracheal transversely—and the tracheotomy tube was inserted without difficulty through an opening made into the trachea. The breathing improved as a result, but did not seem to be completely relieved. On return to the ward the child's condition was fair, but later she became cyanotic, gasped for breath, and finally stopped breathing and died.

I am indebted to Dr. Donald Teare for the post-mortem findings: "Small wart-like papillomata of the vocal cord, tracheitis, acute bronchitis, emphysema of the mediastinum (some of the bullae being 2 cm. in diameter), and bilateral pneumothorax were found." He adds the comment that "acute respiratory infection was superimposed on the papilloma of the cord so that the tracheotomy did not completely relieve the respiratory distress." Though this is the first case of this nature that I have encountered, it would appear from the literature that this complication is not so rare as might be supposed. Minor degrees of emphysema of the mediastinum probably resolve and are therefore overlooked unless a radiograph is taken, and severe conditions, with pneumothorax ending fatally, may not be properly diagnosed unless the disaster which has overtaken the lungs is recognized.

At operation a suture was placed at the top end of the wound because a deep and rather mobile trachea necessitated a long incision, as is often the case in a child, otherwise the wound was left open and lightly packed with gauze beneath the cannula. Close suturing has been thought to be a possible cause (C. Jackson). There is no reason to suppose that the pleural dome was injured at the time (another cause cited). The usual explanation given is that air enters through the wound in the cervical fascia, becomes imprisoned in the mediastinum, especially when the obstruction is not relieved, and finally reaches a tension high enough to rupture the mediastinal pleura, which is generally thin, particularly in children. When there is a pneumothorax there seems always to be a coexisting mediastinal emphysema; the pneumothorax too is usually bilateral.

Michels (1939) has suggested the preliminary use of the bronchoscope to restore an adequate airway as early as possible and so convert a struggling and restless child into a quiet one. At operation it would seem desirable to disturb the layers of the cervical fascia as little as possible after incising them. The possibility of the sudden onset of pneumothorax as a complication after operation, as shown by hyperresonance, a displaced heart, and absent breath sounds, must be kept in mind, and appropriately treated by aspiration when it appears.

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An Unusual Case of the Labyrinthine Fistula Symptom

Rarefaction and compression of air in the external auditory meatus producing nystagmus, giddiness, or other labyrinthine reactions is known as the labyrinthine fistula symptom. The syndrome is caused by the partial destruction of the bony wall of the labyrinth (commonly by chronic otitis, rarely acute), so that alterations in atmospheric pressure within the external auditory meatus are transmitted through the perforated drum membrane to the labyrinthine fluid. This syndrome is important because it indicates direct communication between the infected middle ear and the labyrinth, and in consequence requires special care.

CASE HISTORY

The patient, a man aged 35, was admitted to the West Middlesex County Hospital on Aug. 28, 1943, having had right otorrhoea of 16 years' duration. The ear had been operated on in 1927, a few weeks after onset of aural discharge, when an incomplete mastoidectomy was performed. For eight days previous to admission he had complained of right-sided headache. This had been followed five days later by the development of pain in the right ear, accompanied by true vertigo—objects in the room moving round him in a horizontal plane—and effortless vomiting. He could not say whether objects moved right to left or left to right. Once during those eight days, while lying in bed on his right side, he had felt "giddy" and vomited.

On examination there was a non-pulsating offensive purulent discharge from the right ear. No nystagmus was obtained when carrying out the so-called "labyrinthine fistula test" (rarefaction and compression of air in the external meatus). There was no tenderness over the mastoid. No abnormality of the central nervous system was found, and the C.S.F. was normal. The discharge gave a growth of anaerobic streptococci and the blood count showed a moderate leucocytosis. The history was suggestive of a labyrinthitis. However, signs of the labyrinthine fistula symptom remained negative, although the patient consistently complained of giddiness and headaches.

Three days after admission he dreamt* that he was in a motor-car which was going round and round, faster and faster, from right to left. When he awoke he was violently sick. Inquiry revealed that he had been lying with his right temporal region pressing on the edge of the mattress. Pressure was applied to that region just above the auricle, when a horizontal rotary nystagmus—slow movement to the left—occurred, and the patient had a recrudescence of the above symptoms. It was noted that the old operational scar was more extensive than usual and reached high up on the right temporal region. The E.N.T. surgeon was consulted, and it was decided that the reason for obtaining nystagmus in this unusual site was that connecting the external scar with the labyrinthine fistula

* Dreams in patients suffering from labyrinthitis with fistula symptoms were described by K. Eisinger and P. Schilder in *Mschr. Psych. Neurol.*, 1929, **73**, 314.

was a band (probably fibrous) which transmitted to the labyrinth pressure applied to the external scar.

A radical mastoidectomy was performed. The bone was found to be sclerotic, and the middle ear contained granulation tissue, pus, and a cholesteatoma. There was a fistula extending to the horizontal semicircular canal filled with granulation tissue, down to which the fibrous tissue of the old incision extended. Thus the suggested causative mechanism was confirmed.

COMMENT

This case has been recorded as an interesting example of the "labyrinthine fistula symptom," in which nystagmus and giddiness were obtained by pressure over the temporal bone and not on compression or rarefaction of air in the external meatus. The narrow external meatus and the scar condition which had developed after the first operation explain this abnormal symptomatology.

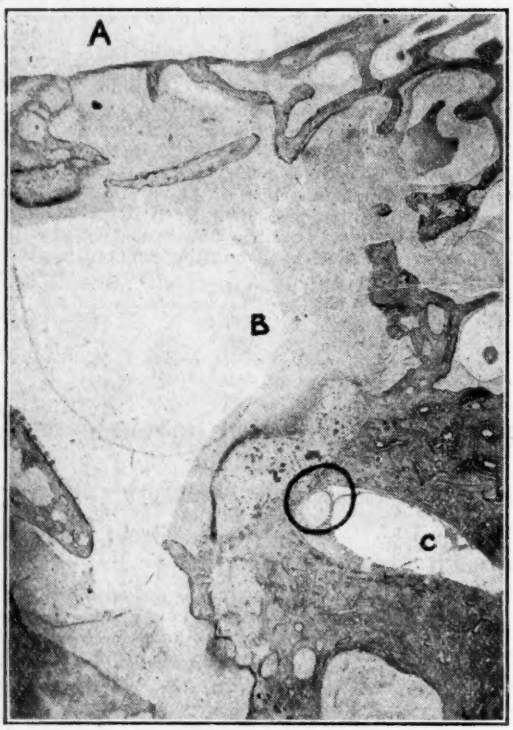


FIG. 1.—A, the middle fossa. B, the antrum. C, the interior of the horizontal bony labyrinth.

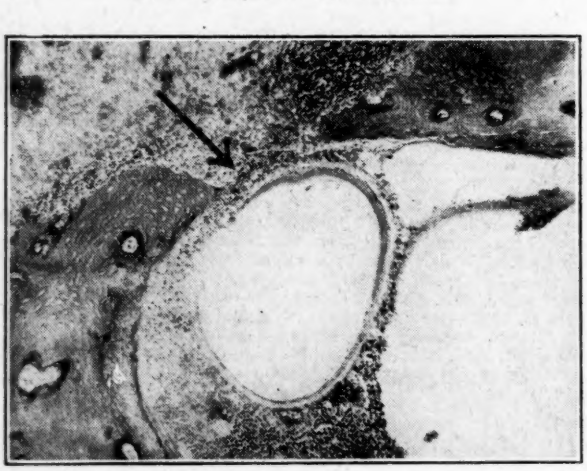


FIG. 2.—High-power field of marked circle in Fig. 1. The fistula is indicated by an arrow.

The photomicrographs taken from a case of purulent labyrinthitis, explain the mechanism of the fistula symptom, demonstrating the perilymphatic space exposed through the erosion of the bony semicircular canal. This histological section was kindly lent to me by Mr. Eisinger, E.N.T. surgeon attached to this hospital.

J. LEE, M.B., B.S.,
A.M.O., West Middlesex County Hospital.

Reviews

THE AMINO-ACIDS OF FOOD

The Amino-acid Composition of Proteins and Foods. Analytical Methods and Results. By Richard J. Block, Ph.D., and Diana Bolling, B.S. (Pp. 396. $6.50 or 36s.) Springfield and Baltimore: Charles C. Thomas; London: Baillière, Tindall and Cox.

The publication of this well-produced, if rather high-priced, monograph is timely for two reasons. First, it collects in one place data that have so far been available only after prolonged search in a widely scattered literature; secondly, it shows how very much more work is needed if we are to have anything like a complete picture of the amino-acids required by man and of their quantitative distribution in his foods. The authors are well-known authorities in the United States, where they have carried out and published new or improved methods for estimating histidine, threonine, leucine, *iso*-leucine, and valine, as well as extensive studies in protein chemistry, notably on serum protein and on keratin and allied substances.

One would therefore expect their book to have a strong practical bias, and in this one is not disappointed. The general lay-out of the first eight chapters is similar: methods for breaking down the proteins of food are given, and these are followed by accounts of any essential separations that must then be carried out before the application of more or less specific tests for individual amino-acids. In these chapters the authors consider in turn the diamino-acids (arginine, histidine, lysine, hydroxylysine, and citrulline); the aromatic amino-acids (tyrosine, tryptophan, phenylalanine, diiodotyrosine, and thyroxine); the sulphur-containing amino-acids (cystine, cysteine, and methionine); the β-hydroxy amino-acids (serine and threonine); the "leucines" (leucine, *iso*-leucine, and valine); the dicarboxylic amino-acids (aspartic and glutamic acids); glycine and alanine; and proline and hydroxyproline. Each of these specialist chapters ends with detailed tables showing the amounts of the relevant amino-acids present in food and other proteins, in so far as this information is available. Some of it is doubtless new and derived from the authors' own laboratory.

In Chapter IX attention is turned to a consideration of general methods for amino-acids—and here there are certainly to be found matters of interest to others than those concerned with practical problems of food composition. That the book has gallantly struggled to keep up to date with a very rapidly moving subject is witnessed by the inclusion here of brief references to the partition chromatography introduced by Gordon, Martin, and Synge, and extended by these workers and by Catch, Cook, and Heilbron—an all-British contribution to this branch of science—as well as to the microbiological methods now being rapidly developed at several laboratories in the United States. Both these procedures will doubtless deserve and get much more detailed attention in the many subsequent editions of this admirable monograph, to which we look forward with interest and the certainty of profit.

A tenth chapter consists of summary tables. There is a slight dogmatic tendency, hardly justified by the experimental evidence available, to be found in the authors' inclusion here of data on the daily quantitative amino-acid requirements of man. Further, they have included histidine in the category of "essential," in spite of the findings of Rose, Haines, Johnson, and Warner, whose paper is not mentioned in the bibliography of some 700 titles. Nor are the titles mentioned of certain other papers by Holt and colleagues, and of yet others by the Rose group; these all bear on the problem of essentiality, not perhaps strictly germane to the book's main theme. Yet the conclusions of these papers are given in Chapter X, and the reader should surely be made able to consult the original papers—otherwise this chapter may appear to consist of summary tables in a sense not intended by the authors. Besides the bibliography there are both author and subject indexes, as well as an interesting and unusual page of typographical information. But the printer slipped once—when setting the title of Chapter VII in the table of contents (p. xiv). The authors, again, can surely not have meant to instruct the user of the polarigraphic cystine determination to keep the voltage constant.

However, criticism on these and other minor points is disarmed in advance by the authors' request for amendments and

corrections: that so few errors or omissions can be found within the 300-odd pages is evidence of their enthusiasm and thoroughness. They and the publishers are to be congratulated, as are all those who will have sense enough, and the good fortune, to acquire a copy of what can become in the course of a very few days an invaluable—even an indispensable—companion in any laboratory or office where food is of the essence of the problem.

DECLINING POPULATION

Population Facts and Policies. By Eva M. Hubback. (Pp. 47. 2s. 6d.) Published for the British Social Hygiene Council by George Allen and Unwin.

Miss Hubback's pamphlet gives a clear and impartial summary of the demographic facts which lead to the conclusion that our population will decline and of the remedies or palliatives which have been proposed. We need not summarize these—we have done so many times; perhaps, however, some general reflections may be permitted.

The various proposals of financial aid to parents are too vague for it to be possible to say definitely whether, let us say, a married couple with five children will, after satisfying the basic needs of the family, have as much to spend on "pleasure" as a childless couple *at the same economic level.* But common sense, even unfortified by statistics, suggests that the childless *will* have a good deal more to spend on themselves. That is no doubt why so much stress is put, and quite rightly put, upon the moral advantages of old-fashioned family life. Still, human beings are imperfect, and the question may be asked whether the simplification of life which war conditions imposed might not, if it became a permanent feature of our civilization, do a good deal more for family life than anything else. One does not miss luxuries and pleasures which nobody can enjoy. One envies somebody, not nobody.

LESIONS OF THE SHOULDER

Shoulder Lesions. By H. F. Moseley, D.M., M.Ch., F.R.C.S., F.A.C.S. (Pp. 181; illustrated. $4.50 or 25s.) Springfield and Baltimore: Charles C. Thomas; London: Baillière, Tindall and Cox. 1945.

The tendency to produce monographs upon very limited aspects of the subject of surgery continues; one of the most recent additions to the list is *Shoulder Lesions,* by H. F. Moseley, of McGill University. The advantages of such monographs are here well displayed, for the surgeon will find a much more satisfying and practically useful account of the various troubles which arise around and in the shoulder-joint than he could possibly expect in even the best general book on orthopaedic surgery. As the author correctly points out, far too little attention has been devoted to many shoulder lesions, considering their frequency.

The first two chapters, upon the mechanism and examination of the shoulder respectively, are excellent, and there is a good description of the scalenus syndrome in the neurological chapter, which is by Dr. McNaughton. Recurrent dislocation of the shoulder is fully discussed, the author's conclusions being that the Bankart operation is superior to all others in that it is a direct repair of the pathological lesion. Derangements of the so-called "rotator cuff" receive adequate attention. The illustrations, especially the skiagrams, have reproduced well.

The general production of the book is up to the high standard set by Messrs. Charles C. Thomas for their publications, but the appearance of an ordinary cartoon, depicting patients with shoulder lesions crowding into the doctor's surgery, on page 146, is a little incongruous and seems out of place in a book of this kind. Will the next "advance" be the introduction of the comic strip into serious medical works?

Notes on Books

Gonorrhoet is a collection of twelve articles on the subject published by the U.S. Office of War Information. The first, entitled "The Management of Gonorrhoea in General Practice," carries the authority of the American Neisserian Medical Society and should be an excellent guide for the general practitioner in not only the treatment but the handling of cases of gonorrhoea. It is pointed out that the mere treatment of the disease does not constitute the sole duty of the doctor; he must diagnose correctly, see that contacts are followed up, and ensure that the patient is really cured. No mention is made of penicillin, but the use of this antibiotic is described in subsequent articles; there is an excellent "reading list" appended. Other articles include "Treatment of Gonorrhoea," issued by the U.S. War Department, giving the details of routine penicillin administration; "Studies on the Action of Penicillin"; "The Treatment of Sulphonamide-resistant Gonorrhoea with Penicillin"; "Penicillin in the Treatment of Ophthalmia Neonatorum"; "The Successful Treatment of Gonorrhoea with a Single Injection of Penicillin." This is an up-to-date symposium, and all those who treat gonorrhoea will do well to consult it if they are fortunate enough to obtain copies through the Librarian at the American Embassy, 1, Grosvenor Square, London, W.

The second edition of Dr. J. BAILEY CARTER'S *Fundamentals of Electrocardiographic Interpretation* (Springfield and Baltimore: Charles C. Thomas; $6.00 post paid) has unfortunately a large proportion of poor illustrations. Many are photographically bad, or reduced to such small size as to be hard to read. The text is too scanty, and much of the extensive bibliography might well be reduced to leave room for more. The index is inadequate. The discussion on chest leads leaves even the experienced reader in some confusion. Nowadays pressure on the carotid sinus has long displaced "pressure on the vagus." There are omissions such as ventricular fibrillation as a cause of Stokes-Adams attacks; parasystole is not mentioned; the discussion of bundle branch block is out of date. Neither the student nor the more advanced reader will find this book of much assistance.

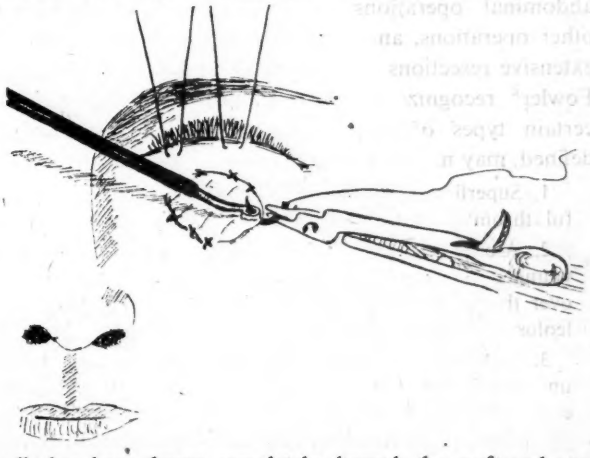
Hayfever Plants, by ROGER P. WODEHOUSE, Ph.D., of the Lederle Laboratories, has appeared as Vol. XV of a new series of Plant Science books edited by Frans Verdoorn. It is published by the Chronica Botanica Company, of Waltham, Massachusetts, U.S.A., and by William Dawson and Sons Ltd., London, W.1, at the price of $4.75 or 30s. The purpose of the book (which most readers in Europe will find far too comprehensive) is to bring together the botany that should be known in order to gain a clear understanding of the part that plants and their pollens play as causes of the allergies, of hay-fever and asthma. As the subtitle indicates, the plants are dealt with in regard to their appearance, distribution, time of flowering, and their role in hay-fever, with special and very detailed reference to the flora of North America. Chapter 1 is on the botany of hay-fever; Chapter 2, on hay-fever plants—gymnosperms; Chapter 3, on hay-fever plants—angiosperms; and Chapter 4 is entirely devoted to regional surveys in North America.

Preparations and Appliances

DEVICE FOR FIXATION OF A WOLFE GRAFT

Major I. C. MICHAELSON, R.A.M.C., ophthalmic specialist, writes:

The accompanying sketch shows a simple device for the fixation of a thin Wolfe graft while it is being stitched into the receiving area. There is a narrow slit opening in the ring just wide enough to allow the thread to be brought out from the aperture. This enables fixation to be maintained until the



needle has been drawn completely through the graft and aperture. The under surface is grooved to permit better fixation.

The purpose of this device is to avoid the trauma inevitable with forceps and the time spent when a plastic hook is used. It has proved of service in the work of plastic and ophthalmic units in the Middle East.

The appliance is made in stainless steel by Messrs. Down Bros. Ltd.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY JULY 14 1945

THROMBO-EMBOLISM

For many decades after Virchow[1] established the embolic basis of infarction of the lung the magnitude of the clinical disaster of pulmonary embolism distracted attention from the source, usually symptomless, of the responsible clot. More recently clinical interest has turned from the lost horse to the stable door, and a symposium in the February number of *Surgery* finally relegates pulmonary embolism to its proper pathological perspective as an occasional effect, simple and mechanical, of a common but rather complicated pathological process. The term "thrombo-embolism" covers all thrombosis, overt and occult, and the embolism which occasionally results from it. Denecke[2] first suggested that the primary thrombus which precedes pulmonary embolism develops not in the femoral and iliac veins, which had previously been suspect, but in the deep veins of the calf and foot. This was confirmed by Rössle,[3] who, at 324 consecutive necropsies, found thrombi in the calf veins in no less than 27%; in nearly a third of these there was a concomitant femoral thrombosis, but the ilio-femoral vein was alone affected in only 2.1%. W. G. Hunter and his associates[4] have traced 9 out of 11 pulmonary emboli to the legs. Thrombo-embolism is not solely a post-operative phenomenon; it may occur in any adult patient who is confined to bed; it is, however, particularly common at certain ages and after certain operations. Barker and others,[5] in a study of 172,888 operations performed in the Mayo Clinic, reported that thrombosis and embolism were twice as common after laparotomy, and three times as common after trans-abdominal operations on the pelvic organs, as after other operations, and that they occurred most often after extensive resections of abdominal organs. De Takats and Fowler[6] recognize in the veins of the lower extremity certain types of thrombosis which, though fairly well defined, may merge into each other by growth of thrombus.

1. Superficial phlebitis may develop, with large red painful thrombi visible and palpable, in pre-existent varices.

2. Ascending plantar vein thrombosis, not uncommon in younger patients, gives the tenderness which Payr[7] described over the lateral aspect of the foot, behind the internal malleolus, and along the posterior tibial vessels.

3. In calf muscle thrombosis, which often escapes detection until pulmonary embolism occurs, there may be cramp in the calf, and Homans's sign[8]—pain in the calf when the knee is extended and the ankle dorsiflexed—can be elicited.

4. Femoral thrombosis, associated as it usually is with "white-leg," is seldom followed by pulmonary embolism. Indeed, Homans has confidently affirmed that if an embolus does detach "one can be reasonably certain that it comes not from the vein of the swollen limb but from the other or innocent-appearing leg." Veal and Hussey[9] and Fine and Starr[10] report instances of pulmonary embolism occurring in the presence of "white-leg."

5. In pelvic vein thrombosis there are swelling and cyanosis of the thigh and sometimes buttock, distension of superficial veins, and, occasionally, slight suprapubic oedema, frequency of micturition, mucous diarrhoea, and firm cords palpable from the rectum; pulmonary embolism is not infrequent if the thrombus is confined to the hypogastric veins, less likely to occur after its extension to the upper pelvic veins.

Thrombosis in the deep leg veins is usually non-inflammatory. Hunter[4] found histological evidence of inflammation in only 2.5% of the thrombosed veins which he examined. For spontaneous coagulation there are presumed to be three important causal factors—slow circulation rate, increased coagulability of the blood, and injury to the intima of the affected vessel. The first of these can be ascribed predominantly to immobility in bed, and venous return may be further impeded by the pressure of an enlarged uterus, by gaseous distension of the abdomen, and by a tight abdominal binder. Flexion of the thigh can obstruct the ilio-femoral veins in the groin if the patient is kept sitting up in bed, and a "donkey" inserted under the knees to maintain that position can compress the popliteal and calf veins. Simpson[11] has reported a real increase in pulmonary embolism among elderly London people who developed "shelter leg" from sitting night after night in camp chairs, a wooden crossbar compressing the back of the calf. Some years ago a remarkable increase in the incidence of thrombo-embolism in a famous hospital abroad followed the introduction of a special type of bed designed to bring the patient effortlessly to a sitting position, hips and knees flexed, by the turning of a handle. Yet slowing of the venous circulation does not in itself cause thrombosis; blood remains fluid in a segment of vein isolated between two ligatures, provided the intima has not been damaged. Ochsner[12] summarizes certain post-operative blood changes which facilitate clotting: hypoproteinaemia, hyperglobulinaemia, increase in fibrinogen, polypeptide, peptidase, and calcium, acceleration of the sedimentation rate, exaggeration of the tendency of the platelets to agglutinate, and, if dehydration has occurred, increased viscosity of the blood. In addition, thrombokinase is presumed to be liberated from the operation field, and Barker[5] reports that the incidence of thrombo-embolism is precisely twice as high after bilateral as after unilateral herniotomy. Important as these post-operative blood changes may be, it has not yet been shown that they are more remarkable after those operations, and at those age periods, when thrombo-embolism is commonest. More convincing is the detection by de Takats in the subjects of thrombo-embolism of a decreased heparin tolerance and even—though this has been more difficult to establish—of an increased prothrombin time in the dilute

1 *Beitr. exp. Path. Phys.*, 1846, **2**, 1.
2 *Münch. med. Wschr.*, 1929, **76**, 1912.
3 *Virchows Arch.*, 1937, **300**, 180.
4 *Surgery*, 1945, **17**, 178.
5 *Proc. Mayo Clin.*, 1940, **15**, 769.
6 *Surgery*, 1945, **17**, 153.
7 *Zbl. Chir.*, 1930, **57**, 961.
8 *New Engl. J. Med.*, 1934, **211**, 993.
9 *Surgery*, 1945, **17**, 218.
10 Ibid., p. 232.
11 *Lancet*, 1940, **2**, 744.
12 *Surgery*, 1945, **17**, 240.

plasma. Injury to the intima, important in arterial thrombosis and post-traumatic venous thrombosis, seems to play little part in post-operative thrombosis and the thrombosis of recumbency. Perhaps the pressure of the calf on the mattress causes intimal bruising and decides the localization of the initial thrombus.

To prevent post-operative thrombosis, blood-flow in the lower extremities may be increased by massage and leg exercises, and blood return may be improved by forbidding abdominal binders, the sitting position, and bolsters under the knees, and avoiding abdominal distension. The Fowler position can safely be obtained by raising the head of the bed; this procedure not only avoids flexion at the hip but encourages leg movement—the patient actively tries not to slip downwards. The incidence of thrombo-embolism can be reduced still further by getting patients up soon after operation. Zava,[13] who allows patients to get up 24 to 48 hours after gynaecological operations, reports 6,000 operations without a single embolism, and Smith and Allen[14] have shown a 50% improvement in the circulation rate if patients are allowed up on the fifth day instead of on the tenth. Elevation of the lower limbs to 30 degrees also increased blood flow in the limbs, and Ochsner[12] advises pressure bandages to improve blood return. Dehydration should be controlled, too, to reduce blood viscosity if for no other reason.

To combat the disturbance of blood coagulability which seems partly responsible for post-operative thrombosis, anticoagulants may be administered. Barker and his associates[15] have given dicumarol after 1,000 operations. The patients were chosen for this form of prophylaxis either because the operation performed upon them (hysterectomy) is commonly followed by thrombo-embolism, or because they had already suffered, or were suffering, from thrombosis or embolism. No instance of thrombosis or of pulmonary embolism occurred in 438 patients who had been submitted to hysterectomy, and the incidence of thrombo-embolism in the whole series was significantly lower than in a comparable control series. The aim of the method is to produce a certain degree of prothrombin insufficiency, and, therefore, since susceptibility to dicumarol varies with the individual, the method is not entirely devoid of the risk of haemorrhage, and should not be employed without daily and constantly comparable estimation of the prothrombin time by the Quick method.[16 17] The drug is given by mouth in a single daily dose—300 mg. on the first day and 200 mg. on each successive day; if the prothrombin time is less than 20% of normal on any day the dose is omitted. The full effect of dicumarol lags 24 to 48 hours behind its ingestion, and to obtain an immediate effect 50 mg. of heparin may be injected intravenously at four-hourly intervals during the first day or so of dicumarol administration. If bleeding occurs it can be controlled by blood transfusion, and the prothrombin time can be raised quickly to a safe level by an intravenous injection of 64 mg. of menadione bisulphite (synthetic vitamin K). Dicumarol therapy should not be employed in the presence of renal or hepatic insufficiency or a tendency to haemorrhage, and it should be given with special care in patients with exposed raw surfaces.

If, in spite of available preventive measures, thrombosis or embolism occurs and is detected, steps are taken to prevent extension of thrombosis and recurrence of embolism. Both lower limbs are elevated by raising the foot of the bed, and paravertebral sympathetic block may be induced to increase the circulation rate. Ligation of the affected vein may have some application, but precise indications for this operation are still not available. Allen, Linton, and Donaldson[18] advise ligation when, after a pulmonary embolism, the site of thrombosis is recognized in one or both calves, the thigh is not swollen, and the femoral vein is not tender, rather than in overt femoral thrombosis. They ligate the femoral vein just below the entrance of its profunda branch. Fine and Starr[10] advise femoral, iliac, or caval ligation according to the upper limit of the intravenous clot, and they perform the bilateral operation even if thrombosis appears to be restricted to one side. Dicumarol therapy seems also to be valuable after signs of thrombo-embolism have appeared. In 81 patients suffering from post-operative thrombosis or embolism de Takats found that in no case was there evidence of embolism or of extension of thrombosis after treatment had begun, and Barker's results were equally satisfactory. It is from recent, friable, non-adherent clot that emboli are likely to be detached; recurrent emboli seem to be due to progressive thrombosis, and if a thrombus can by the administration of anticoagulants be prevented from growing, emboli are not likely to occur or to recur.

The conclusions to be drawn from the recent literature of thrombo-embolism are (1) that a studied post-operative regime will lower the incidence of this complication; (2) that the careful daily post-operative examination of all adults for signs of thrombosis in leg and foot will permit detection of the early stages of thrombo-embolism; and (3) that measures for the prevention of embolism are increasing in number and effectiveness. Routine post-operative administration of anticoagulants is not likely to be generally adopted at present—standard tests for dosage control are not yet sufficiently simple—but the value and practicability of dicumarol therapy in preventing embolism or extension of thrombosis after thrombosis has actually occurred seem to be proved.

13 *Policlinico*, 1940 (Sez. Pract.), **47**, 865.
14 *Proc. Mayo Clin.*, 1941, **16**, 53.
15 *Surgery*, 1945, **17**, 207.
16 *Amer. J. med. Sci.*, 1935, **190**, 501.
17 *J. Amer. med. Ass.*, 1938, **110**, 1658.

EXTERNAL PANCREATIC SECRETION IN MAN

The external secretion of the pancreas is regarded as being under a dual nervous and hormonal control. Pavlov[19] demonstrated that stimulation of the vagus nerve produced a secretion of pancreatic juice, small in amount but rich in ferments; Bayliss and Starling[20] and later investigators showed that the injection of secretin produced a large volume of alkaline juice poor in enzyme content. Even this clear-cut division of function between the nervous and hormonal stimulants may not be entirely true, as it has

18 *Ann. Surg.*, 1943, **118**, 728.
19 *The Work of the Digestive Glands*, 2nd ed., 1910, London.
20 *J. Physiol.*, 1902, **28**, 325.

recently been shown that secretin-free extracts of intestinal mucosa will stimulate the secretion of pancreatic enzymes.[21] These observations are based on animal experiments, and the confirmation of some of them on human subjects has depended on two methods, neither of which is entirely satisfactory. The first of these is the collection of pancreatic juice by means of a duodenal tube, as, for example, in the work of Ägren and Lagerlöf,[22] who stimulated the pancreas by the injection of secretin. By this method the pancreatic juice is unavoidably contaminated by intestinal secretions. The second method is the study of juice obtained from fistulae of the pancreas—the sequel, usually, to an acute inflammatory condition of the pancreas or to drainage of a pancreatic cyst. It is obvious that the reactions of the pancreas in such pathological conditions may not be comparable with those of the normal organ. Using one or other of these methods various observers have found that the human pancreas, like that of lower animals, responds to the intravenous injection of secretin by the secretion of an alkaline fluid with a low concentration of enzymes. Attempts to demonstrate the effect of nervous stimulation of the human pancreas by the injection of various parasympathetic drugs have yielded contradictory results. Comfort and Osterberg[23] found that mecholyl chloride caused a marked stimulation of enzyme output by the pancreas. In cases of pancreatic fistulae, however, McCaughan, Sinner, and Sullivan[24] found that physostigmine and mecholyl chloride increased the flow of juice; whereas Miller and Wiper[25] found that physostigmine and pilocarpine diminished the rate of secretion. The marked side-effects of these powerful drugs may explain the discrepant results. All observers have found that the introduction of hydrochloric acid into the intestine is a powerful stimulus to pancreatic secretion. Comfort and Priestley,[26] who compared the effect of meals given by mouth and administered intraduodenally, have shown that the stimulant effect of carbohydrate and protein meals upon pancreatic secretion is probably secondary to their stimulant action upon the secretion of hydrochloric acid by the stomach. Fat, on the other hand, appears to stimulate pancreatic secretion by acting directly from the small bowel.

In general, therefore, the results in man agree with those obtained on animals in showing the importance of secretin for the production of the alkaline fluid, of gastric hydrochloric acid for the release of the secretin, and of the vagus nerve for the enzyme content of the juice. Two important gaps in our knowledge of the physiology of the pancreas remain unfilled either by animal experiments or by observations on man. These are the question whether the concentration of the enzymes of the pancreatic juice is adapted to the nature of the foodstuff being digested; and, secondly, the more general question of how the discharge in the vagal fibres of the pancreas is controlled. There is no doubt that in animals electrical stimulation of the vagus nerve brings about a parallel increase in the tryptic, lipolytic, and amylolytic activities of the pancreatic juice. Whether, when the vagal activity is increased during digestion, there is a selective increase in the secretion of one or other of the enzymes corresponding to the type of food being digested, and whether disease of the pancreas may selectively diminish the secretion of one enzyme (as Ägren, Lagerlöf, and Berglund[27] have suggested) is an unsettled question. The more general problem of how the vagal stimulation of the pancreas is brought about also awaits solution. In the case of gastric secretion the vagus is the efferent pathway for the production of the important psychic secretion. All observers, however, are agreed that any psychic effect on the pancreas is either feeble or non-existent. Possible solutions of the problem are that the stimulation of the pancreas depends on long reflexes through afferent nerves from the intestine itself, or is brought about by some chemical stimulant in the blood acting on the vagal nucleus in the medulla during digestion.

21 Harper, A. A., and Raper, H. S., *J. Physiol.*, 1943, **102**, 115.
22 *Acta med. scand.*, 1936, **90**, 1.
23 *Amer. J. digest. Dis. Nutr.*, 1941, **8**, 337.
24 *Arch. intern. Med.*, 1938, **61**, 739.
25 *Ann. Surg.*, 1944, **120**, 852.
26 *Proc. Mayo Clin.*, 1943, **18**, 409.

MÉNIÈRE'S SYNDROME

The clinical diagnosis of Ménière's syndrome is nearly always easy, but the pathological basis of the lesion or stimulus which brings on these attacks is still unknown. A number of temporal bones have now been examined, and in some gross dilatation of the membranous labyrinth has been demonstrated; nevertheless we do not know the mechanism by which the labyrinthine storm is raised, and consequently treatment is empirical, such as destruction of the labyrinth or section of the eighth nerve. Shelden and Horton[28] based a method of treatment on the idea that alteration in the permeability of the capillary walls with local oedema is the probable aetiological factor, without specifying whether the oedema is likely to be intracellular or extracellular, and histamine was suggested as an agent which would perhaps affect capillary permeability. In 1940 and 1941 they reported[29] spectacular relief in certain cases by the intravenous injection of histamine. Now Lillie, Horton, and Thornell[30] present a review of 25 cases treated by injection of histamine but studied from a slightly different aspect. Of these patients 18 were men and 7 women, and their ages ranged from 27 to 65 years, with an average of 46. The treatment consisted in the intravenous injection of 2.75 mg. of histamine diphosphate (the equivalent of 1 mg. of histamine base) in 250 c.cm. of either normal saline or 5% solution of dextrose or 0.8% solution of potassium chloride, at the rate of 20 to 60 drops a minute. The administration was repeated daily for three to six days. Subcutaneous injections were also given, consisting of a 1–10,000 solution of histamine base, the dosage rising gradually by 0.05 c.cm. from 0.2 c.cm. to 1.0 c.cm. Audiometric studies of this series of cases showed that in 12 of the 25 the hearing was improved by the treatment, and in 6 of these the improvement was very noticeable. In 4 of these 6 the potassium chloride solution was used. Tinnitus was present in all but one case. In 10 there was no change, but in 2 cases the tinnitus disappeared, and it was much improved in 8. Vertigo was the symptom which showed the best response, for it disappeared completely in 19 cases, and in only 2 was there no change. These observers were not able to confirm the suggestion made by Atkinson[31] that such cases could be divided by intra-

27 *Acta med. scand.*, 1936, **90**, 224.
28 *Proc. Mayo Clin.*, 1940, **15**, 17.
29 *Surg. Gynec. Obstet.*, 1941, **72**, 417.
30 *Ann. Otol.*, St. Louis, 1944, **53**, 717.
31 *J. Amer. med. Ass.*, 1941, **116**, 1753.

dermal testing into those sensitive and those insensitive to histamine. By such a selection of cases those insensitive to histamine could be treated in some other way, and Atkinson proposed the administration of nicotinic acid for its vasodilator effect, not for its action as a vitamin. Regarding tinnitus as a form of paraesthesia,[32] Atkinson has claimed that all vasodilators bring transient relief—an effect which can be produced by blocking the stellate ganglion or injecting drugs with vasodilator action. Using nicotinic acid as the vasodilator, he claims a high percentage of good effects in all forms of deafness accompanied by tinnitus.

From all this it appears that the control of the labyrinthine circulation may prove to be the factor in the successful treatment of Ménière's syndrome, but it is probably the circulation of the endolymph, rather than the vascular circulation, which needs to be controlled. However, very little is known about the endolymph, though by analogy it is probably secreted by the capillaries in the stria vascularis in the cochlea in the same way as the cerebrospinal fluid is secreted by the choroid plexus. The endolymph is probably secreted also from capillaries in the saccule and utricle and in the semicircular canals, but nothing is certain about this. It remains also to determine how the effect can be maintained in persons who respond favourably to histamine, and the continuation of maintenance doses by subcutaneous injections is suggested. This line of management is supported by the success which sometimes attends simple restriction of salt intake, the sodium ion being considered the morbid factor. Large doses of ammonium chloride are used to replace the salt—45 grains in capsules three times a day with meals. The success attending the small number of cases in which the histamine was given in a solution of potassium chloride is perhaps significant. There will, however, remain a proportion of cases in which the function of the labyrinth is so disordered that the symptoms will yield only to destruction of the labyrinth or section of the eighth nerve. Lillie, Horton, and Thornell give an excellent bibliography of the whole subject, of which the above commentary displays only one facet.

[32] *Ann. Otol.*, St. Louis, 1944, **53**, 742.

MEDICINE AND THE PROGRESS OF THOUGHT

In the recent course of lectures at Cambridge on the history of science Dr. A. E. Clark-Kennedy made an outstanding contribution on *The Art of Medicine in Relation to the Progress of Thought*. It is fortunate, therefore, that his lecture has now been published in book form by the Cambridge University Press (2s.). The very moderation of his claims adds to their effectiveness. Broadly speaking, he considers medicine exercised an influence only at three epochs—the Hippocratic Age, the Renaissance, and in modern times. In the first period the great achievement was to lay the foundation of the observational method in the study of natural phenomena, thereby adding to the progress of thought in a way which it would be difficult to overestimate. Disease was regarded as a disharmony of body or mind; in general the Stoical philosophy was adhered to and an ethical standard formulated. Galen, the aftermath of this epoch, by adapting Aristotle's conception of the relation of the soul to the physiology of the body, helped to prepare the world for the acceptance of individual responsibility and the Christian interpretation of human life. His teleological teaching was naturally attractive to the new faith, though the Pauline conception of the "vile body" was alien to him. At the Renaissance the biological studies of Vesalius and Harvey were based on physical concepts, and the body was regarded as a machine worked by mechanical laws, mind and consciousness being by-products of the material world. Hobbes accepted this view, and metaphysics was not yet ready to criticize it. Despite its own advances, medicine cannot claim to have made any other particular contribution to human thought in that age. When he comes to the modern period Dr. Clark-Kennedy finds it easier to speak of the achievements of medicine in the latter half of the nineteenth century than of its contribution to thought. Darwin and Pasteur exerted a profound influence, but neither of them was a medical man. In this century study from the medical aspect of genetics and psychology has had an effect scarcely less profound; it has influenced modern thought, education, and our way of life. Repressions, rationalizations, and the unconscious mind have become topics of conversation. If man is merely the resultant of his inherited genes and his environment the question of moral responsibility is raised in a peculiarly disconcerting form. But it is probable that psychology, leaving out of account the possibility of something introduced and influencing the mind from without, and tending to ignore the freedom of the will, gives only a partial explanation of the working of the human mind. If the increasing influence of medicine is to be rightly directed the present breach between science and humanism must be healed. These are only a few of the many thought-provoking topics in a lecture which establishes the author in the ranks of scholar-physicians.

BARNARDO CENTENARY

A service, attended by the Lord Mayor and Lady Mayoress, was held in St. Paul's Cathedral on July 4 to commemorate the centenary of Dr. T. J. Barnardo's birth and to give thanks for his work for children and the founding of the Barnardo Homes. The Bishop of Exeter in an address said that Dr. Barnardo was a great man, a seer, a man who saw defects in the law concerning children, a pioneer in whose footsteps many others had followed. Thomas John Barnardo was born in Dublin on July 4, 1845. After medical study in London, Edinburgh, and Paris he took the F.R.C.S.Ed. While at the London Hospital in 1866 his attention was drawn to the condition of waif children on the streets. He continued to investigate the subject and to labour in spare hours on their behalf. He established his first Home in 1867, founded a village for girls at Ilford in 1873, an institution for sick waifs in 1887, and formed the Young Helpers League in 1891. He died on Sept. 19, 1905. Before his death he had rescued and trained over 59,000 destitute children and had otherwise helped a quarter of a million children in want.

The next session of the General Medical Council will begin on Tuesday, July 17, at 10.30 a.m., when the President, Sir Herbert Lightfoot Eason, will take the chair.

The Yorkshire Cancer Campaign was launched in 1925, and next year will therefore see the coming of age of cancer research in Yorkshire, guided by a strong medical and scientific committee and carried out by members of the staff of the department of experimental pathology and cancer research at Leeds University and also at Sheffield. The 19th annual report was presented on June 4. It includes an account by Prof. R. D. Passey of the work of the department at Leeds, with special reference to experimental carcinogenesis, experimental bladder cancer, and an inquiry into the question whether arsenic is really capable of giving rise to malignant disease. There is also a report of progress in the radium department of the General Infirmary at Leeds. Prof. H. N. Green supplies an account of research on cancer in the department of pathology at Sheffield University. As in the two previous years, the main work there has been an attempt to elucidate factors which may modify the pathogenesis of tumours induced by 2-acetyl aminofluorene. Studies of constitutional factors have started, and dietetic and hormonal factors are being investigated.

MEDICAL REHABILITATION IN HOSPITAL*

BY

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A comprehensive rehabilitation scheme, in the modern sense of this term, is a two-stage process. The *first stage* is that of *medical rehabilitation*, which covers the period extending from the beginning of an illness or injury to the end of convalescence and reconditioning. This stage is primarily the concern of the medical man and his team of auxiliaries. The *second stage* is that of *social* and *industrial rehabilitation*, in which the victim of illness or accident, after having been restored to the maximum degree of fitness possible under the circumstances, is resettled in his former occupation or trained to follow a new occupation. In the past, the social and industrial aspects of rehabilitation have depended almost entirely on the zeal and activities of voluntary organizations. But now the State has entered the field as a powerful reinforcement, through the new functions of the Ministry of Labour. But I would emphasize the view that there is no clear-cut dividing-line between medical rehabilitation and social or industrial rehabilitation as it concerns the sick person. The whole process is indivisible. The hospital physician or surgeon who is interested in his patients as men and women conditioned to a particular social or industrial environment must of necessity want to learn how successfully—if indeed at all—they have become adjusted to the mental and physical stress of the old work or the new vocation. The medical man must also be prepared to challenge, if need be, the suitability of the new working conditions. And equally the social worker, whether lady almoner or Ministry of Labour rehabilitation officer, must come into action during the stage of medical rehabilitation. They should make their first contacts with the hospital patient before his period of treatment and re-enablement has ended. This early contact is provided for under the Disabled Persons (Employment) Act of 1944—a notable piece of social legislation which is the outcome of the Tomlinson report (1942). The complete scheme of rehabilitation is in its infancy, but we can look forward to a time in the near future when the harmonious blending of remedial and social measures will be one of the outstanding features of our health services. Furthermore, there are signs that certain industries may make a contribution to the stage of medical rehabilitation by providing workshops in which lighter forms of occupation can be deliberately prescribed on a curative and remedial basis. This experiment is now under trial in the Austin Motor Company's works at Birmingham in conjunction with the Birmingham Accident Hospital, and is meeting with conspicuous success.

History of Medical Rehabilitation

In the age of Pericles we find that Hippocrates gave clear instructions for the rational use of sun, air, water, and above all *exercise*, as a means of restoring the injured and sick to health. Hippocrates, it is interesting to learn, understood the importance of balancing a regime of *exercise* with a regime of *rest*. The respective roles of rest and exercise have been the subject of debate again and again during the 2,000 years and more which have elapsed since the founding of the Hippocratic school of medicine.

The end of the eighteenth century and the earlier years of the nineteenth were the period of the founding of the earliest orthopaedic hospitals in various European countries, including Great Britain. As this was long before Lister had made operations safe by the introduction of the antiseptic technique, non-operative methods of treatment held the field. The Orthopaedic Institute founded at Montpellier, in France, in 1825 is deserving of special notice, for it was perhaps the first of the country orthopaedic hospitals—the forerunner of hospitals which are so familiar to us to-day. This institution was set up in a park on the outskirts of Montpellier and was equipped on almost a lavish scale for gymnastics, games, and other forms of recreational therapy—in short, for many of the remedial measures included in the modern programme of medical rehabilitation based on our wartime hospitals. Since those early days orthopaedic hospitals and orthopaedic surgeons have played the predominant part in the development and organization of the expanding techniques of rehabilitation, and have been responsible for their inclusion in the armamentarium for the treatment of crippling disease and injury. It was Sir Robert Jones (1858–1933), the greatest master of orthopaedic surgery of modern times, who during the First World War gave us the following definition of the sphere of action of the orthopaedic surgeon: "The treatment by manipulation, operation, re-education and rehabilitation of the injuries and diseases of the locomotor system."

The First World War, 1914–18.—This was the period when the present-day concept and practice of medical rehabilitation first took shape. Many will remember the splendidly equipped military orthopaedic hospitals, as they were called, which Sir Robert Jones, after much opposition, was permitted to organize. There was the parent hospital at Alder Hey, Liverpool; the Shepherd's Bush Hospital in London—the greatest of them all; there were military orthopaedic centres at Birmingham, Oxford, Leeds, Edinburgh, Glasgow, Aberdeen, Belfast, and Manchester. In all these hospitals a wide range of rehabilitation facilities was installed—departments of physiotherapy for massage and electrical treatment; departments of hydrotherapy, with whirlpool baths as the popular treatment; gymnasia for class exercises and fast-moving games; and curative workshops equipped for both light and heavy crafts. Rehabilitation programmes were devised for patients immobilized in bed owing to gunshot fractures of the lower limbs, as well as for those who were ambulatory. A full "working day" was followed with the various types of remedial and diversional therapy represented in a programme for each patient. But in the military hospitals of that day the cost of rehabilitation facilities—apart from massage, the simpler forms of electrical treatment, and remedial exercises—was not provided by the Treasury under the Army vote. It was the B.R.C.S. who came forward to fill the gap, and by generous gifts of money enabled these special centres to set up remedial departments on a scale hitherto unknown in Great Britain, or indeed elsewhere.

After the U.S.A. entered the war against Germany, the British scheme of special military orthopaedic hospital centres was adopted and brought to a high pitch of efficiency by Col. J. E. Goldthwait, of Boston, one of the leaders of orthopaedic surgery in America at that time. In the American scheme we see the first appearance of the occupational therapist as a member of the hospital rehabilitation team. Large numbers of young women were trained in Boston during 1917 and came to France in 1918 to work in the splendidly equipped American military hospitals, which at the time of the Armistice provided over 250,000 beds. This gave a great impetus to a new profession in the hierarchy of the "rehabilitationists" of the future.

The Period between the Wars.—The elaborate and highly organized rehabilitation departments of the wartime orthopaedic centres were carried over into peacetime and flourished during the period of greatest activity of the Ministry of Pensions. The great Shepherd's Bush Hospital, once the Mecca of surgeons from all parts of the Empire, ultimately reverted to its old functions as a general hospital under a Board of Guardians. The curative workshops, alas! were dismantled. In the early years after the war it was found that the planned rehabilitation day with its disciplined programme could not be transplanted in its entirety to civilian hospitals. In any case, both accommodation and equipment were lacking. Remedial measures, however, were provided in plenty by the rapid development and expansion of massage departments in hospitals where no such developments had existed before. Occupational therapy in Great Britain was fostered mainly in the mental hospitals.

Rehabilitation in its modern guise came back into the picture during the period 1935–9, stimulated by the publication of the findings of (1) the Fracture Committee of the B.M.A. (1935); and (2) the Interdepartmental Committee of the Ministry of Health and Home Office on Accidents (1939). These reports

* An address given to the East Lancashire branch of the B.R.C.S. Officers' Training Course, Manchester, May 13, 1945.

found not only that there was a need for organized fracture or accident services in all large hospitals, but that after such hospital departments had made their maximal contribution to the functional recovery of the injured man or woman, in a certain proportion of cases something more would be required. For this final act of reconditioning, or rehabilitation as it now came to be called, special residential centres outside the hospital appeared to be necessary. During the present war, under the aegis of the Miners' Welfare Commission, a number of miners' rehabilitation centres have been established in England and Scotland, and are in full activity. More recently non-residential centres for dockers have been set up in the ports of Liverpool and Manchester. These "day centres" provide a full and varied programme of diversional and remedial pursuits and deal with the after-effects of illness as well as with accidents.

Medical Rehabilitation To-day

We have now brought our story down to the present day. As the result of the experience gained during the five and a half years of the war which has so recently ended in Europe, we have become even more conscious of the significance of both *medical* and *social* or *industrial* rehabilitation. The whole conception has assumed a more dynamic form. But, as I have tried to show, rehabilitation is not a new idea. During the Second World War the hospital rehabilitation schemes developed by the Emergency Medical Service of the Ministry of Health, and by the hospitals of the fighting Services, have in essence reproduced the pattern of the military orthopaedic centres of the First World War. To see the full medical rehabilitation programme in action in an E.M.S. special centre is a stimulating and inspiring experience. Each patient has his day mapped out, and he goes from one department to another in accordance with his special needs. In such hospital rehabilitation departments, patients who are likely to regain full fighting or industrial capacity in a relatively short period can be submitted to strenuous types of reconditioning. But in order to witness the most powerful and intensive reconditioning programmes we must go outside the hospitals and visit an Army Convalescent Depot, an R.A.F. Rehabilitation Centre, or a Miners' Rehabilitation Centre. Here we can see the application of the supreme tests of fitness and agility.

What lessons have we learnt as a result of all this experience? How much of this pattern of intense and sustained activity can be applied to the sick and injured during in-patient treatment and convalescence in our hospitals in peacetime? The experience of the E.M.S. has emphasized two facts: first, that rehabilitation facilities exist not only for the injured but also for the sick; and, secondly, that for all patients in bed, unless acutely ill, a suitable rehabilitation programme can and should be instituted in the early days of the disease or injury. The basis of such an active regime is movement, as opposed to rest and relaxation; movement prescribed in the form of individual exercises or in simple "class" exercise under the direction of the physiotherapist or ward sister. The occupational therapist is also to be introduced at an early stage, and the most suitable bedside craft or diversion chosen for each individual patient. For patients whose illness or disability necessitates a long stay in hospital such active measures have a special value in preventing certain complications to which bed-fast patients have always been liable. This was known to Hippocrates. The large-scale experiment of the Ministry of Health in *medical* rehabilitation, conducted mainly in *ad hoc* hospitals, has stimulated the civilian hospitals to review and overhaul their existing facilities. In the departments of physiotherapy and in the training of physiotherapy students, greater emphasis is now laid on the use of active rather than passive methods of treatment. There is also a move to set up separate rehabilitation huts or departments where a full day programme can be offered to selected groups of patients whose occupation or disability calls for such special attention. Hospitals are also becoming more aware of the need for a more direct link with the stage of social and industrial rehabilitation. Hospitals which have been slow to encourage an almoner service, or have misused the almoner for the purpose of assessing and collecting contributions, are beginning to realize the necessity for the attachment of social workers to all the main clinical departments. Furthermore, they are learning to open their doors to the entry of Ministry social officers from the outside. This is all to the good; it represents a step forward in the fusion of curative medicine and social services in a co-ordinated scheme for the benefit of the hospital patient. Such are the immediate lessons to be learnt from the experience of the last few years.

There is now another side of the picture to be considered. We must realize that we are still looking at medical rehabilitation through the spectacles of total war, with its increase in tempo and intense stress on the minds and bodies of men and women. The urge has been to return the man (or woman) to the fighting line or workshop at the earliest possible moment and to cut down periods of incapacity by a degree which can be demonstrated to all by the figures of the statistician. Medical rehabilitation, in our present mood, has come to mean an intense tightening up—a hardening process, with speed as its prime mover. We may well ask ourselves whether there is no longer a place for rest and relaxation during and following illness or accident. A regime consciously or unconsciously designed during war to provide for the needs of fit young men or women, at a time when there is unity of purpose in the nation, may not of necessity be suitable for a society which, in Great Britain in ten years, will present an increasing proportion of elderly folk who must continue to work. To cut down, by the most intensive form of rehabilitation, the incapacity period for a particular illness or accident by, say, 2.5 days may not in the future appeal to members of a society which comes to think of work, rest, and leisure in terms of human happiness, "the good life," rather than in terms of individual industrial output. This is not to say that the period of convalescence should not be better planned in the future; purposive activity remains the keynote of recovery. For, as Hippocrates taught, "exercise strengthens and inactivity wastes." But in any comprehensive rehabilitation plan there is a time and a place for both mental and bodily rest as well as action. I believe that there will still be room for the old-style convalescent home—the rest home—but equipped with facilities for diversion and recreation, to provide for a stage in recovery which precedes the final act of reconditioning. Less strenuous measures of rehabilitation will also be required by that large section of the community, mainly middle-aged, who are the victims of the various forms of chronic rheumatic disease.

It will thus be necessary, in the future planning of schemes of rehabilitation, to preserve that harmonious balance between rest and activity which is best calculated to restore the sick or injured man or woman to a state of maximum health and happiness.

EPSOM COLLEGE IN 1944-5

At the 92nd annual general meeting of Governors, held on June 22, Lord Leverhulme, the president, referred to the new Education Act and said that the good news that Epsom College and all other public schools in the country were safe in their independence at least for some years to come was a result of the patient work of the Governing Bodies Association, the Headmasters' Conference, and other bodies. The new Burnham Scale would affect salaries as a whole, but, as many felt that the new scale was not generous enough to graduates or to headmasters, most public schools would wish to pay more. A fair and reasonable post-war salaries scale at Epsom was now being considered. The fees, too, would have to be increased, because not only did they not cover the cost just before the war, but a heavy rise in expenses must occur when wartime restrictions were removed. Two events were imminent—namely, the College Centenary and the War Memorial.

Referring to the finances during 1944, Lord Leverhulme said that the small surplus on the school account would have been more by some £1,300 but for the V bombs, which caused the sending home of boys not taking public examinations two or three weeks before the end of the summer term, for which an allowance was made to parents. The numbers of boys during 1944–5 showed an increase of 15 over the preceding school year, and it was confidently hoped that the school would have its full complement of 500 boys in 1946. With regard to new benefactions, the president stressed the value of the bequest of the late Mr. J. W. Loader Cooper founding scholarships for sons of solicitors, and of the Eastes Trust, the income from which would go in the relief of doctors of either sex, less than 60 years of age, or widows, and also to educate children of medical practitioners.

FUTURE HOSPITAL SERVICES

PATTERN FOR LONDON AND SURROUNDING AREA

In 1941 the then Minister of Health announced his intention of ordering a survey of hospital services. For this purpose England and Wales was divided into ten areas, and the survey was conducted in each area by a team of two or three hospital experts. For London and its region Dr. A. M. H. Gray and Dr. Andrew Topping were appointed surveying officers, and the result of their work is now published in a massive Blue Book,[1] two-thirds of which is taken up with tables and analyses.

The area of this survey was roughly bounded by the line of the Chilterns to the north-west of London and the east and south coast from Essex to Dorset, comprising twelve counties or parts of counties, with, in 1938, a population of over 14 millions. In this area there are 390 voluntary hospitals, the hospitals of 25 major local authorities, and 130 isolation hospitals provided by minor authorities. In 1938—the last normal year—the voluntary hospitals in this area had 472,750 new in-patients, and the local authority hospitals a slightly larger number (476,507). Note is made of the patchwork of administrative arrangements and the irrelevance of administrative boundaries to the distribution and flow of hospital traffic, so that patients living within easy reach of a municipal hospital may be debarred from using it because the administrative boundary runs through the next street. Voluntary hospitals are, of course, free from this difficulty, but they have their own drawbacks—competitive development to meet the same need, friction instead of co-operation with other hospitals, and dispersal of resources instead of concentration into efficient units.

Voluntary Hospital Services

The surveying officers make three main criticisms of voluntary hospitals:

1. In their view there are no advantages attached to the custom of expecting the consultant and specialist to give his services without remuneration. The custom has resulted in unequal and unsatisfactory distribution of consultants and specialists. Only by the system of salaried part-time specialists can a service be provided adequately covering the whole area.

2. The large proportion of surgical cases dealt with at small "general practitioner" hospitals has the unfortunate result that surgery is often carried out by general practitioners whose skill and experience must necessarily be limited. In any case it is a diversion of this type of hospital from its proper function, which is the nursing under the care of their own general practitioner of medical and surgical cases which cannot properly be nursed at home.

3. The independent spirit of voluntary hospitals, their initiative and power of inspiring local loyalty are not always conducive to the maintenance of an efficient service. There have been examples of a tendency to adopt a course of action more likely to enhance the importance of individual hospitals than to produce the best facilities for the patient. The way in which some hospitals have undertaken the treatment of malignant cases by radiotherapy without either expert staff or the necessary ancillary facilities is mentioned as an example.

Local Authority Hospitals

Municipal hospitals also come in for some criticism, particularly as regards their methods of staffing. They are staffed by a medical superintendent whose duties are primarily administrative, by whole-time officers, and by visiting specialists who do not normally have charge of beds. The arrangement may have been satisfactory when comparatively little "acute" work was done, but it has ceased to be adequate. It is open to four main objections:

1. It tends to result in understaffing; the number of senior staff at municipal general hospitals is proportionately much lower than at similar voluntary hospitals.

2. The appointment of whole-time staff tends to divorce the work of the municipal hospitals from that of the voluntary hospitals and thus accentuates the division.

3. The visiting consultant, not having charge of beds, has little real stake or interest in the work of the hospital.

4. The system of paying comparatively low salaries to whole-time specialists and the highest salary to the medical superintendent has tended to drive clinicians of good standing into administrative posts as the only avenue of promotion.

[1] *Hospital Survey. The Hospital Services of London and the Surrounding Area.* 1945. London: H.M. Stationery Office. (10s. net.)

Other points emphasized in connexion with municipal hospital services are the urgent need for further provision of consultative out-patient departments; the room for improvement in arrangements made for the diagnosis of patients before they are classified as "chronic," and for their care as long-stay cases; and the fact that local patriotism has in some districts produced the same tendency towards duplication of services and over-ambitious developments which has been noted in the voluntary hospitals.

It is added that co-operation between the two branches of the hospital service could with advantage be closer in most districts. Here and there it has reached a more advanced stage, and by the appointment of the same consulting staff in certain branches and a limited division of functions some voluntary and municipal hospitals are laying the foundations for a thoroughly co-ordinated service in the future.

Adequacy of Services

In the London voluntary hospitals in 1938 61% of the in-patients came from the county of London, 30% from the four adjoining counties (Middlesex, Essex, Kent, and Surrey), and 9% from further afield. It is noteworthy that in spite of the considerable development of municipal hospital services in London and of the fall of nearly 8% in the population of the county between 1931 and 1938, the number of Londoners treated in voluntary hospitals in London increased by nearly 5%. Again, in spite of the development of municipal hospital services in Middlesex and Surrey, and to a less extent in Essex and Kent, the number and proportion of non-Londoners treated in London voluntary hospitals rose by 15% during that same period, though that, of course, is partly a reflection of the great increase in the population of Outer London.

Before the war heavy pressure was experienced on general hospitals in London, especially south of the Thames; there was also general shortage of beds in Middlesex, at many places in Essex and Kent, and particular deficiencies in certain parts of Surrey. General practitioners in almost every area outside London testified to widespread difficulty in obtaining consultant and specialist services. As for pathology, except in London and the large towns, what is known as "postal pathology" was relied on, with little opportunity for consultation between pathologist and clinician.

The war, and especially the Emergency Hospital Scheme arising out of it, has had a marked effect on hospital services. It has helped the co-ordination of hospitals, the use of accommodation in the most advantageous manner, and the free transfer of patients. London since 1938 has sustained a net loss of 2,370 general hospital beds, but Middlesex has had a net gain of 1,365, and over the area covered by this survey the net gain has been 4,260, or, taking into account the beds in public assistance institutions and sanatoria, nearly 11,000. These should go a long way towards relieving deficiencies until major building becomes possible.

"On the solid foundation provided by the pre-war hospitals, both voluntary and municipal, with their staffs and equipment, and by the help given by emergency developments, it should be possible when the war ends to introduce a service better than that of 1938 in all parts of our survey area."

It is often suggested that, with modern transport, hospitals should be located outside towns, in more healthy surroundings. The surveying officers do not think that suggestion altogether well founded. Town hospitals may have pleasant surroundings if planning is adequate, and both for the out-patient and for the in-patient and his visitors ease of access is as important as suburban air. The "acute" general hospital must be as nearly as possible central to the population it serves, and this applies even more strongly to the teaching hospital.

Medical Staffing and Hospital Linkage

The surveying officers point out that the problem of making hospital facilities available in every area is largely a problem of staff—not of building. The circumstance which has prevented the development of hospitals staffed by specialists in Greater London is the impossibility of remunerative private practice away from Central London. They hold, therefore, that specialists should be adequately paid for their hospital work, whether at a voluntary or municipal hospital, and whether on a whole-time or part-time basis. They declare against payment by

sessional fees. Such a method is satisfactory neither to the specialist nor to the hospital. It exposes the former to the charge of trying to increase his income by rendering unnecessary services, and tempts the latter to economize by calling for his services less frequently than it should.

In urging a common specialist staff as a link between voluntary and municipal hospitals, the surveying officers are anxious that it should not be assumed that the specialist staff of undergraduate teaching hospitals will link up with large general hospitals at a distance. In their view this will be impracticable. Any linkage between the teaching and the outer hospitals must be sought in other ways—for example, by house appointments at the outer hospitals for graduates from the teaching hospitals.

It is recommended that the appointing bodies for the common specialist staff should be assisted by an expert medical advisory committee comprising representatives of the medical faculty of the university, of the branch of medicine concerned, and of the hospitals where the specialists will have to work. In municipal hospitals it is considered that the salaries payable to whole-time senior members of the clinical staff should be little, if at all, lower than that of the medical superintendent, and the latter, whose title might be changed to "senior resident medical officer" or "hospital superintendent," should be engaged on administrative duties only.

Concentration of Services

This survey sets out the desirable provision in terms of beds and medical staff for a district hospital (that is, a general hospital, staffed by specialists and assistants, and providing for all normal types of "acute" work, both out-patient and in-patient) and for a special centre (an in-patient unit for specialties the exercise of which necessitates a high degree of concentration of staff or equipment in order to produce maximum efficiency). It is considered that maternity accommodation should be provided, wherever possible, in a unit associated with a general hospital. The provision for cases of infectious disease by means of small independent isolation hospitals is regarded as an anachronism. The solution is believed to lie in one of two directions—the provision of larger independent hospitals or of fever units in association with general hospitals. Beds for the chronic sick should also be provided in association with a general hospital, preferably as a separate block in the same curtilage.

In local (cottage) hospitals patients should be under the care of their own general practitioner, and it is thought essential that every practitioner in the locality should be able freely to secure the admission of his patients and to attend them. The hospital should, however, be visited regularly by the specialist staff of the district hospital with which it is associated.

"It is one of the great advantages of the smaller voluntary hospital in the past that it has provided a link between the general practitioner and the hospital service and a meeting-place for discussion and consultation between practitioners."

Short-term and Long-term Proposals

A large number of recommendations are made for the building or extension of hospitals, but a distinction is drawn between short-term proposals, which can be put into effect in the immediate post-war period, and long-term ones which may reasonably be spread over the next twenty or thirty years in the light of present knowledge and probable change. In some areas there is pressing need for new buildings, for which hutted accommodation might for the present serve, and in almost all areas an even more pressing need for specialist staff. The key to the problem is once again the decentralization of specialists from London and their appointment at the principal hospitals—the so-called district hospitals—in the surrounding area. So far as geographical and other circumstances permit, two or three major hospitals should be grouped for the part-time employment of specialists.

The building recommendations may be briefly summarized as follows:

County of London.—Except in South London, where two new hospitals (at Tooting and Sydenham) are needed, the problem is one of co-ordination, with contraction rather than expansion. Teaching hospitals should remain in Central London, except Charing Cross, which might migrate to Harrow, and St. George's, to South-West London. Ultimate migration of the Royal Free by union with some other centre, such as the Royal Northern, should be borne in mind. Special hospitals should be reduced in number and grouped so far as possible around the University, sharing certain common services. It is suggested that a large site should be reserved in the university precincts in Bloomsbury. Here, among others, a new hospital for dermatology and a new hospital for urology should be established. St. Thomas's should be reconstructed and King's College extended.

Middlesex.—New district hospitals at Harrow (which might be the new Charing Cross), Enfield, and to the north of Golders Green; extensions at Ealing, rebuilding at Hillingdon, and new out-patient departments at West Middlesex and Staines.

Kent.—New hospitals in the Gillingham, Folkestone–Dover, and Bexley areas, and extensions at Canterbury.

Surrey.—New hospitals in Coulsdon–Purley and Woking, rebuilding and development at Kingston, Epsom, and Croydon.

Essex.—New hospitals at South Ilford–North Barking, Wanstead, West Ham, and Colchester.

Sussex.—Additional beds in the Worthing–Shoreham district.

Hertfordshire.—New hospital or extensions at Watford, and within a short time at St. Albans.

Bedfordshire.—Extensions at Luton and Bedford.

Hampshire, Dorset, and Isle of Wight.—New hospital at Aldershot, extensions at Portsmouth, Southampton, and Newport (I.O.W.), and extensions or new hospital at Weymouth.

Special Centre Services

Apart from special cases, an example of which is an orthopaedic hospital or a radiotherapy unit for cancer, no sufficient reason is found for special hospitals, apart from the requirements of teaching or research. The recommendations, however, propose certain special centre services, one such service being tuberculosis. In the past there has been a marked shortage of accommodation for this purpose, and some of the existing units are poor and obsolete. Nevertheless, if the best use is made of wartime extensions it should be possible to go far towards remedying the deficiencies, at least temporarily. For orthopaedics it is considered that each district hospital—or one hospital within the district hospital group—should provide a unit for fractures or traumatic surgery. Four rehabilitation centres are suggested: the Northern (L.C.C.) Hospital, Winchmore Hill; Mount Vernon Hospital, Northwood; Queen Mary's Hospital, Sidcup, and Orpington Hospital. The extent to which these centres are needed and the best method of organizing them can be decided only in the light of experience.

Some outstanding proposals are made concerning radiotherapy centres. An efficient centre is believed to require a population of about two millions as its constituency if uneconomical dispersal of skilled staff and costly equipment are to be avoided. At convenient points there should be hospitals fully staffed and equipped to provide treatment by radium and deep *x* rays, and outside these centres the treatment of malignant disease by these methods should not be undertaken at any hospital, large or small, general or special. The staff of the centre should visit all the district and subdistrict hospitals of the area for consultation on diagnosis and treatment as part of the cancer service.

According to this survey there are only two places in the region to which radiotherapy centres can reasonably be allocated—namely, London and Southampton. There is proposed accordingly a concentration of facilities in six grouped hospitals in London, each group serving a population of from 1½ to 2 millions, and, for Hampshire, Dorset, the Isle of Wight, and a part of Wiltshire, a centre based on the South Hants and Southampton Hospital, serving a population of 1½ millions. The six London centres would be the following:

1. Middlesex, University College, Marie Curie, and Mount Vernon Hospitals, the last two perhaps amalgamating.
2. St. Bartholomew's.
3. London Hospital.
4. Guy's, Lambeth, and St. Thomas's, with Lambeth, perhaps, playing the principal part.
5. Westminster and Royal Cancer Hospitals, with additional beds in the adjoining St. Luke's (L.C.C.) Hospital.
6. Hammersmith Hospital.

Within each group constituting a centre the radiotherapeutic, surgical, medical, and other staff engaged in cancer treatment would be common to all the hospitals.

Dr. Gray and Dr. Topping have liberally interpreted their reference to survey the hospitals and advise the Minister what area would properly be served by a hospital system centred on

London, and what modifications or enlargements of existing hospital facilities would be necessary or desirable to give effect to the general principles of post-war policy which the Minister announced in Parliament in October, 1941. Very much that they have to say applies not to the London region only but to the whole country; but that does not make it less useful or pertinent.

ROYAL SOCIETY OF MEDICINE

PRESENTATION OF AWARDS

At the annual meeting of Fellows of the Royal Society of Medicine on July 3 the gold medal of the Society was presented to Brig. Sir Lionel Whitby, and scrolls of honorary fellowship to certain distinguished persons in the medical services of the British and Allied Forces. The meeting was preceded by a luncheon at which the recipients of the honours, the Belgian and Norwegian Ambassadors, and the Presidents of the Royal College of Physicians, the Royal College of Obstetricians and Gynaecologists, and the British Medical Association, were present.

The President of the Society, Surg. Rear-Adml. Gordon-Taylor, in making the presentations, addressed the Czech, Norwegian, and Belgian recipients each in his own tongue. Of Sir Lionel Whitby he said that it was primarily for his distinguished work on the problems of wound shock and transfusion of blood that the gold medal was awarded. Of the numerous factors which had contributed to the lowering of mortality among those damaged by enemy action, despite the increased gravity of the injuries sustained, blood transfusion indubitably had played the most important role. He described Sir Lionel Whitby as "the greatest vampire the world has known."

The first of the awards of honorary fellowship was made to Gen. Frantisek Langer, D.G.M.S., Czech Army. The award was accepted on his behalf by Col. Mahler, who explained that Gen. Langer had now returned to Czechoslovakia. He took occasion to express the sincere thanks of his compatriots for the friendship with which they had been received in this country. Dr. Karl Evang, D.G., Norwegian Public Health Services, was the next recipient. The President said that the award was made in virtue of his distinguished services to free medicine and in the hope that this small gesture would help him in his work of rehabilitation in Norway. Dr. Evang expressed thanks especially for the way in which the Royal Society of Medicine had opened its doors and made its facilities available to foreign visitors. He added that Norwegian medical science before the war, though it had turned partly to this country and the United States, had also looked to the south, to Austria and Germany. There would now be a radical change, and in future more Norwegian medical men would be knocking at the British door. The last of the Allied recipients was Col. Gallemaerts, D.G.M.S., Belgian Army, who accepted the award as a compliment not to himself alone but to his fellow Belgians.

It had been intended to confer the honorary fellowship on Gen. Smirnov, head of the medical service of the Red Army, but the President explained that although letters and cables had been sent to him in Moscow, telling him of his nomination, they must have miscarried, for no reply had been received. This academic award could not be received by any Russian representative on his behalf until certain Governmental formalities were completed. If these difficulties could be smoothed over there was a hope that they might yet one day see the distinguished D.G.M.S. of the famous Red Army among them.

The honorary fellowship was next conferred on Surg. Vice-Adml. Sir Sheldon Dudley, D.G.M.S., R.N., for his wide and distinguished work in the field of pathology and epidemiology and also as Director-General of his great Service; on Lieut.-Gen. Sir Alexander Hood, D.G.A.M.S., an outstanding feature of whose reign of office, said the President, was the harmonious relation between himself and his staff and those drawn into the Service from civilian ranks; on Air Marshal Sir Harold Whittingham, D.G.M.S., R.A.F., whose many great contributions to pathology, clinical medicine, and especially the medical problems connected with aviation, were acknowledged; and on Sir Francis Fraser, D.G., E.M.S., who had earned the high regard of the immense service which he had controlled.

At the ensuing business meeting of the Society the annual report of the Council was adopted. This showed a total membership of 7,390, a gain of 609 on the year. Reference was made to the successful series of Inter-Allied Conferences on War Medicine held throughout the session. The Society had made all medical men in the Allied Forces welcome to its meetings and as guests in its library. It was mentioned that the formation of a Section of Endocrinology was under discussion by the Council. An Oestrogen Committee had also been set up following a meeting of the Section of Radiology on the treatment of cases of cancer of the breast with stilboestrol; the investigation undertaken by the committee, with Prof. E. C. Dodds as chairman, had been considerably extended.

ROYAL MEDICAL BENEVOLENT FUND

The annual general meeting of the Royal Medical Benevolent Fund was held at the Medical Society of London on June 20. The death of the late president, Sir Thomas Barlow, was recorded with great regret, and many references were made to his untiring work for and sympathy with the Fund. Sir Arnold Lawson, K.B.E., F.R.C.S., was elected as president, and Dr. C. Luther Batteson as honorary treasurer and Mr. R. M. Handfield-Jones, *M.C.*, M.S., as honorary secretary. The honorary auditors, Messrs. Deloitte, Plender, Griffiths and Co., were re-elected for the ensuing year.

The resignation of Dr. C. O. Hawthorne, who for many years served as chairman of the Case Committee, was received with very great regret, and as a token of the members' appreciation and his great service he was elected a vice-president of the Fund together with Dr. W. P. S. Branson, C.B.E., who had served on the committee for many years, and Mr. F. J. Strong Heaney, F.R.C.S., who rendered valuable services as honorary local secretary in Liverpool for many years.

The balance sheet and accounts of the Royal Medical Benevolent Fund and of the Ladies' Guild of the Royal Medical Benevolent Fund were adopted. A vote of thanks was proposed from the chair to the *British Medical Journal* for the help given to the Fund during the past year, special reference being made to the generous support afforded by the *Journal* to the Christmas Gift Appeal.

ORDER OF ST. JOHN

The following medical promotions in and appointments to the Venerable Order of the Hospital of St. John of Jerusalem have been announced:

As Knights, Surg. Rear-Admiral C. P. G. Wakeley, C.B., Air Marshal Sir Harold E. Whittingham, K.C.B., K.B.E., K.H.P., and Dr. J. M. Wilson. *As Commanders (Brothers)*, Major-Gens. Sir Ernest M. Cowell, K.B.E., C.B., D.S.O., K.H.S., and Sir Percy S. Tomlinson, K.B.E., C.B., D.S.O., Lieut.-Col. D. C. L. Fitzwilliams, C.M.G., and Drs. D. L. Beath, O.B.E., E. Lewys-Lloyd, and T. H. Leggett. *As Officers (Brothers)*, Col. D. Clyde, C.I.E., Lieut.-Col. L. K. Ledger, O.B.E., and Major G. B. Thomas, I.M.S., Capt. G. F. Shepherd, Surg. Capt. A. McCallum, O.B.E., V.D., Surg. Cmdrs. J. S. Elliott, A. E. Ginn, and C. H. Birt, Air Cdre. D. McLaren, Group Capt. J. Kyle, and Drs. L. D. Porteous, J. B. McKay, W. Mailer, C. V. Nicoll, A. P. Spark, S. McClure, C. H. Buckley, and J. C. Ashton. *As Serving Brothers*, Lieut.-Cols. T. F. Briggs, and F. A. Bevan, T.D., R.A.M.C., Messrs. D. A. Davies, F.R.C.S., J. B. Dobson, F.R.C.S., and K. Watson, F.R.C.S.Ed., and Drs. J. K. Thomas, G. F. Mitchell, J. H. Kahn, D. F. Barrett, W. C. Saunders, W. H. Shilvock, W. J. F. Craig, H. S. Savage, E. L. Butler, T. R. Hunter, E. M. Dearn, W. Radcliffe, C. C. H. Cuff, O.B.E., S. F. Jayawardene, W. B. Winckworth, W. W. Ballardie, J. Fenton, G. R. Bruce, O.B.E., J. W. Pickard, W. A. F. Hurst, J. N. Hudson, D. G. Lloyd, R. G. Bingham, C. T. Scott, J. S. Briggs, J. P. Davies, R. W. Edwards, J. A. Evans, H. Middleton, M.C., and W. G. Saunders. *As Serving Sisters*, Drs. Ethel Browell and (Mrs.) Ada V. V. Parkes.

TRAVELLING FELLOWSHIPS IN MEDICINE

The Medical Research Council announces that preliminary arrangements have been made for the resumption of Rockefeller Medical Fellowships, to be provided from a fund entrusted to the Council by the Rockefeller Foundation of New York. These fellowships are intended for graduates resident in this country who have had some training in research work in clinical medicine or surgery, or in some other branch of medical science, and who are likely to profit by a period of work at a centre in the United States or elsewhere abroad, before taking up positions for higher teaching or research in the United Kingdom. It is hoped it may be possible to make a limited number of awards during the academic year 1945–6, depending on the availability of candidates and facilities for travelling.

MATERNITY AND CHILD WELFARE

NATIONAL CONFERENCE IN LONDON

A National Conference on Maternity and Child Welfare was held at Friends House, London, on June 28 and 29. It was arranged by the National Association of Maternity and Child Welfare Centres and for the Prevention of Infant Mortality, and was attended by about one thousand delegates—the largest number ever recorded.

In opening the conference Dr. JANE H. TURNBULL, chairman of the National Association, recalled the fact that the first conference of the kind was held in 1906, and was presided over by the late Mr. John Burns, then President of the Local Government Board. Since 1913 there had been a conference every year, with the exception of two years in each of the great wars. The conference represented a valuable union between Government and municipal effort on the one hand and the efforts of voluntary organizations on the other. She went on to refer to the inevitable modification of maternity and child welfare services which would come about in connexion with the proposed National Health Service. Any such modification, however, should develop and not destroy the admirable organization for maternity and child care exemplified in the schemes of the best local authorities. Progressive research was needed in the nutrition of mother and child, and more attention to education in mothercraft and fathercraft, to the care of the homeless child, and to the standards of staffing in institutions.

Minister of Health's Survey

The MINISTER OF HEALTH (Mr. Henry Willink), in a presidential address to the conference, gave a survey of the achievements of maternity and child welfare during the war. He began with a reference to the improvement in vital statistics:

	1940	1944
Birth rate per 1,000 population ..	14.6	18
Infant mortality per 1,000 births ..	56.7	46
Stillbirths " " " ..	36	28
Neonatal deaths " " " ..	29.6	24.5*
Maternal mortality " " " ..	2.61	1.94*

* Provisional figures.

Mr. Willink said that in the middle of a General Election he would not be expected to make any startling announcement on policy; he would say only a little on projects in hand. Among past achievements he referred to the emergency maternity homes and ante-natal and post-natal hostels for expectant mothers from the target areas. Within a few months from the start of this effort 260 emergency homes, with about 3,700 lying-in beds, were opened, in which 75,000 confinements took place in the year. Many of these homes had now been taken over by the major welfare authorities or had been closed if no longer suitable, but many others would have to remain open for some months yet, until more of the maternity accommodation which had been destroyed by bombing could be restored. Along with these maternity homes had been built up a system of residential nurseries for "under-fives" who had been deprived of parental care. The third great wartime experiment in maternity and child welfare was the provision of day nurseries for the children of war workers—1,500 of them, with places for between 70,000 and 75,000 children.

The campaign for diphtheria immunization had been actively continued, and the results were good. Not only was the death rate from diphtheria falling but there was a striking difference in incidence, and a still more marked difference in death rate, between protected and unprotected children. The necessary standard of immunization had not yet been reached if the disease was to be controlled, and he hoped there would be no slackening of effort. Two of the subcommittees of his valuable Advisory Committee on Mothers and Young Children had recently completed their work. The result was, first, a leaflet on rickets, shortly to be published by his Department; and, secondly, a report on arrangements for the provision and supervision of foster-mothers.

As for the future, there was need for increased maternity accommodation. During the war 5,500 new beds had been put into commission in maternity homes, but the proportion of institutional confinements had increased from about one-third to one-half of the total, and the demand for accommodation had been by no means satisfied. The Government idea was that all maternity units should be planned as integral parts of the pattern of hospital accommodation over a wide area, even greater than the area of a single local authority. It was desired to associate maternity units with large general hospitals, so far as geographical considerations allowed, in order to make readily available the services of consultants and the use of special equipment. It was also proposed to extend the training of health visitors from six months to nine months. He alluded finally to the Royal Commission on Population now sitting, pointing out that it was a new thing in history that the growth or decline of a population now depended on the deliberate judgment of the people themselves—a momentous and perplexing problem for Western civilization.

Nutrition of Expectant Mothers

The first discussion at the conference was on nutrition. It was opened by Prof. S. J. COWELL, who stressed the importance of a sufficiency of protective foods, during both pregnancy and lactation, and made it clear that in practice the aim of preventing deficiencies was not as yet fully realized. Dr. MARGARET WRIGHT addressed herself particularly to vitamin K, the coagulation vitamin, mainly provided by vegetables, the intake of which remained at the discretion of the expectant and nursing mother. A regular intake of leafy vegetables, tomatoes, and liver might be expected to improve the dietary resources of vitamin K. One medical measure which might be responsible for diminishing the absorption of this vitamin was the general use of mineral oil in the form of liquid paraffin. This had been shown to reduce the absorption of carotene in animals, and it seemed uneconomic to take so much trouble over dietary provision and education of expectant mothers and at the same time encourage them to use a popular laxative which must in some measure minimize their efforts. She suggested that a revision of medical and nursing opinion on liquid paraffin was due. Miss R. M. SIMMONS, dietitian to Hammersmith Hospital, gave an interesting account of the ways in which expectant mothers and mothers of young children are taught to feed themselves and their offspring.

Unity of Services

A session presided over by Prof. J. M. MACKINTOSH was devoted to the question of unity of the maternity and child welfare services. The subject was introduced by Dr. NORA WATTIE, senior child welfare officer, Glasgow Corporation, who argued that as reproduction was a continuous physiological process from conception until the end of lactation it was logical that there should be a unified control of services which a mother needed; yet she pointed out that during this period of reproduction mothers might pass through several hands from one administration to another.

> "No one can be satisfied with the present set-up. For instance, in most areas the maternity and child welfare ante-natal clinics are not staffed by personnel who have a hospital connexion, and the medical staff very often after appointment no longer engage in obstetric practice. In my view the ante-natal clinics and the maternity beds should be administered as a single service in the health department, the clinics, whether held at the hospital or at the maternity and child welfare centre, being staffed by medical officers whose duties would include both clinic and hospital practice. . . . There are obvious advantages in having the maternity unit part of a general hospital sharing common services and facilities, but it should not be administered as such. The maternity unit should be regarded not so much as a hospital but as part of the cycle of childbearing—a normal physiological process. It is mainly for this very important reason that emphasis should be laid on the necessity for avoiding any administrative break in the continuous care of the mother during the expectant, lying-in, and post-natal stages. It follows, therefore, that indoor maternity provision should be administered as part of the general maternity service."

Dr. Wattie considered it disappointing that the conception of the health centre in the White Paper had been so unfavourably received, because, for large areas of population, such a development was just what was wanted. The joint centre would become the focal point for the persons engaged in the various aspects of the care and health of the child from birth to the end of school life. The same medical officer should look after the child from infancy up to school-leaving age, and

the health visitor should carry out the same continuity of supervision.

The Midwives' View

Miss G. L. REED, who spoke on behalf of the College of Midwives, said that midwives desired a closer unity in the services. For all domiciliary midwifery there should be access to specialist hospital services when and where necessary, but those services should not intrude so far on the normal as to minimize the position of the mother as a member of the family and a partner in the home. A large percentage of women would always need to be confined in hospital, but the encouragement of family unity should not be forgotten; and birth in people's own homes had been for many generations an underlying factor of British midwifery.

Dr. ALAN MONCRIEFF put forward the views of the British Paediatric Association on certain points. The association, he said, disliked the idea that ante-natal work should be divorced from the actual conduct and supervision of labour and the puerperium. He hoped that in future it would no longer be true, as it was in London, that ante-natal work was largely undertaken by the borough councils and the actual midwifery by the county council. If medical officers were to be responsible for seeing the mother right through they would clearly have to be specialists in their subject. Similarly in the case of the child, it was hoped that medical officers would undertake the care of the newborn, of the older infant and young child, and of the school child, so that there was a continuity right through childhood; and here again specialization appeared to be necessary.

> "If general practitioners are to do more of the health work among children, as the White Paper suggested, they too must be closely linked with the appropriate hospital services. A general practitioner doing infant welfare clinic work, for example, should also be on the staff as a clinical assistant of the nearest paediatric department. The division in the past between hospital paediatricians and child health medical officers has been unfortunate, and a unity in this part of the work seems to me of very much greater importance for the health of the community than preserving a unity at the level of the medical officer between maternity and child welfare. The training of medical officers of health in the future must surely allow for early specialization in one or other of these major branches."

One delegate from the floor of the hall protested against high maternity-home charges, which she declared to be a "dreadful scandal."

Day Nurseries

A discussion on the State and the parent in relation to the child was noteworthy for an attack by the ARCHBISHOP OF WESTMINSTER (Dr. Griffin) on day nurseries. Efforts to tempt women to leave the care of their little ones to professionals were, he said, both harmful and unnecessary in normal circumstances. Money spent on day nurseries had better be spent in consolidating home life. Dr. LESLIE HOUSDEN tilted at the idea of Francis Bacon, repeated in modern times, that the best works and of greatest merit for the public have proceeded from unmarried or childless men. Well, Shakespeare and Milton each had four children; Bach had twenty; Charles Darwin was survived by seven children; Mohammed had six, and the founder of the Salvation Army had eight. The happy family was not a drag but an inspiration. Dr. GRANTLY DICK READ made an eloquent plea for the teaching of parenthood and the spread of a more general knowledge of the advances in obstetric science so that fear of childbirth would cease.

The Lancashire County Council was among the first to provide a mass radiography unit, and at the beginning of this year the County Tuberculosis Committee presented a report of the first three surveys, ending on June 7, 1944. The surveys were made on (*a*) the staff of a county mental hospital, (*b*) employees of a large industrial undertaking, and certain allied groups; and (*c*) employees of a Royal Ordnance Factory. According to the report made by the County Central Tuberculosis Officer, Dr. Lissant Cox, 10,730 miniatures were taken, and 842 cases were submitted to full-sized radiography. No abnormalities were found in 93%; active pulmonary tuberculosis was found in 36 cases, and cardiovascular lesions were detected in 62. No diagnosis was made on the miniature film alone. Twelve of the 36 pulmonary cases had a positive sputum. Expressed in another way, the pulmonary cases represent 3.3 per thousand examinations, and the sputum-positive cases 1.1 per thousand.

Reports of Societies

URINARY BILHARZIASIS

Some surgical aspects of urinary bilharziasis were discussed by Mr. R. OGIER WARD at a meeting of the Section of Urology of the Royal Society of Medicine on June 28, Mr. McG. LOUGHNANE presiding.

Mr. Ogier Ward said that patients with symptoms of this disease, typical or obscure, might be expected to make their appearance in hospitals in this country during the years immediately ahead, for British troops had served in territories where bilharziasis was always present and many had been infected. A. J. Renoult, the French surgeon of Napoleon's time, reported the condition as occurring mainly among cavalry, the result of excessive sweating, forced marches, and riding horses *vif et fougueux*. During the Boer War 625 cases were recorded, and a few were found among soldiers returned to England. In the first European war there were also many cases.

He next discussed the three main species of the bilharzia or schistosoma parasite: *S. haematobium*, the cause of the genito-urinary disease under consideration; *S. mansoni*, the cause of Egyptian splenomegaly and intestinal bilharziasis; and *S. japonicum*, the cause of eastern bilharziasis, a variety affecting chiefly the liver and spleen and confined to the territories bordering the western shores of the Pacific. The distribution of *S. haematobium* in Africa included the British territories of Sierra Leone, Gold Coast, and Nigeria, and all the north coast. There were a few places in Arabia and Iraq. As for the east and south of the continent, it was said to predominate in those territories whose waters drained into the Indian Ocean—e.g., the Zambesi. Most of the research on the parasite had been carried out in Egypt, an ideal country for its cycle. The disease was shown to have existed there since the twentieth dynasty (1250–1000 B.C.). Ruffer, in 1910, taking six mummies of that dynasty, soaked some of their organs in a solution containing glycerin, and on cutting microscopical sections found in two of them the terminal spined ova in the straight renal tubes.

In recent years the disease had assumed serious proportions in Egypt. In 1939 it was estimated by Scott, a director in the public health department of the Egyptian Government, as a result of 40,000 examinations, that half the population in the lowest and widest part of the delta harboured this parasite, very large numbers also being infected with the *S. mansoni*. The peculiar methods of agriculture in Egypt subjected the fellahin to constant and heavy reinfection. In other lands the disease did not commonly give rise to the advanced pathological conditions with which Egyptian surgeons were familiar.

Diagnostic Investigations

The most general method of making a diagnosis of urinary bilharziasis was to examine the last few drops of urine passed. Until cystitis occurred—and that was late in the disease—the urine, except for the last few drops, was clean to the naked eye. A solitary examination of the urine for ova was a quite unreliable test, for ova were not continuously released from the lesions of the mucosa. Five consecutive morning specimens, the last few drops of urine being collected and centrifuged, would in about 85% of cases show either ova or red blood cells. Even in the absence of these the continual presence of pus or albumin meant that a diagnosis of bilharziasis might be made until it was disproved. Cystoscopy was the most accurate method of diagnosis in all active phases, and should never be omitted in a suspected case in which no ova were found. Patches of congestion, most commonly in the trigonal region, were the earliest abnormality seen in the bladder mucosa, but these had no characteristics which would enable a certain diagnosis to be made. Later stages were specific. The first was the appearance of bilharzial tubercles, similar to the tubercles due to Koch's bacillus, with occasional congestion of the area of mucosa around a collection of them. An intense invasion by ova often caused very marked oedema. Bilharzial nodules were larger than tubercles, more permanent, and greyer, and were commonly met with in chronically infected bladders.

Mr. Ogier Ward went on to discuss the different ways in which bilharziasis of the bladder might develop from the earliest stages. Live ova from an infected area of the bladder might work their way through the mucosal covering and be shed into the urine, the healed area leaving no scar; or dead ova which had not been discharged might remain as tubercles for a long time. Calcification of bladder tissues around the ova was a permanent feature in severely infected, long-standing, and untreated cases, the calcification affecting chiefly the submucous layers of the bladder wall. Another stage was the development of bilharzial ulcer, usually single. When large numbers of ova collected in the submucous layer they might cause tumour-like bilharzial masses to project into the bladder. Tubercles were often seen on the surface of these masses. This condition could not be cured by antibilharzial treatment. Vesical papillomata due to bilharzia were common in Egypt, and it was said by Makar that bilharzial cancer was not rare in the Egyptian upper classes. Among the primitive populations of the Delta these malignant growths often produced great extensions and widespread metastases before the patients reached hospital, and in such cases pain, strangury, frequency, and bleeding were severe. Vesical calculi were met with in bilharziasis, and the ova had been found within the stones.

Until treatment with antimony sodium tartrate was introduced by McDonagh and Christopherson there was no known remedy for urinary bilharziasis. A number of other drugs had been tried, but tartar emetic remained the best, despite some unpleasant symptoms associated with its administration. The antimony first sterilized the generative apparatus of the female worms and ultimately destroyed them. In this country it was very unlikely that the latter complications—such as bladder growths and fistula—would be encountered, but examples of the earlier stages might well be seen. Officers and men of all three Services had been in the countries where this disease was endemic, and clearly some might bring it home with them. Urologists should know how to diagnose the early stages of bilharziasis; its later manifestations might remain chiefly a matter of general interest. One thing to be on the watch for was the insidious danger of ureteric obstruction when all signs of active prostatic infection had disappeared. It was necessary also to bear in mind that the worms, when their normal vein paths were obstructed, might find their way to the seminal vesicles, prostate, vas, epididymis, testis, or tunica vaginalis, and cause sclerosing changes in those organs.

Mr. CLIFFORD MORSON said that his first introduction to this disease occurred when he was house-surgeon to Sir John Bland-Sutton, who always believed that malignant disease was parasitic in origin. A case of cancer of the bladder was admitted, and in the course of investigation the ova of bilharzia were found, which seemed to confirm Bland-Sutton's theories. During the last war Mr. Morson had come into contact with cases of the disease while in Egypt, and what had impressed him was the complete indifference shown by the native to the passing of blood in the urine.

Sir PHILIP MANSON-BAHR said that he had tackled bilharziasis in its origin in the field, together with his colleague Dr. N. H. Fairley. In 1916 men at the camp at Tel-el-Kebir on the eastern border of the Nile delta welcomed a chance of bathing in one of the irrigation canals, but they quickly began to suffer from a skin irritation, an urticarial rash, and an irregular pyrexia, and a number of cases of bilharziasis appeared. The condition was becoming much more prevalent than formerly in West Africa, and he did not doubt that cases would be found in this country among men returning from war service.

A representative of the War Office referred to an interesting observation lately made in India, where there were large numbers of West African troops near native villages and rice fields, and where it was quite certain that owing to the insanitary habits of the Africans the water would be infected. Yet although the ova were widely demonstrated in the African troops and among a proportion of the European officers, there was no infection of the Indian population. Some of the ova were collected from the troops and put in contact with local snails, but none of the snails became infected.

Mr. OGIER WARD, in reply, stressed the importance of thorough treatment with antimony. The course should amount to 30 grains, and it must be intensive lest a resistance to antimony was acquired.

Correspondence

Poliomyelitis in Malta

SIR,—As one who was connected with the poliomyelitis epidemic in Malta from its beginning may I be allowed to add a few comments to the very interesting paper by Prof. Seddon and Drs. Agius, Bartolo, and Coleiro (June 2, p. 759).

The authors, and your editorial comment (p. 773), give the impression that the generalized pains and the stiffness of the back, usually regarded as the first signs of this disease, were not a striking feature of the epidemic; that in fact they were conspicuous by their rarity. This view requires clarification. Of the 375 cases which occurred in Malta (as distinct from Gozo) I saw 210 in consultation at their homes before admission to hospital. On Jan. 2, 1943, I was appointed consulting physician to St. Luke's Hospital, and all the cases treated there were under my care until the acute phase of the epidemic was over, and Prof. Seddon arrived to take charge of what had now become an orthopaedic rather than a medical problem.

My experience was that two types of pain could be distinguished: an *initial* generalized hyperaesthesia due to meningeal irritation, and a *later* more localized pain sometimes associated with muscular spasm. The generalized pain was common and occurred in at least two-thirds of the cases. It usually preceded the paralysis and it affected limbs which were not subsequently affected. Here the diagnostic problem was to determine whether the child refused to move on account of the pain or on account of the muscular weakness. At the beginning of the epidemic scurvy was often suspected as a possible cause in view of the food situation at that time. The pain was not spontaneous and, left to itself, the child made no complaint. It only appeared when any attempt at movement was made by the examiner, and was especially marked when the movement involved the spine. Shaking the bed was also resented. This hyperaesthesia, elicited by examination, was not likely to be noticed by mothers—a fact which may explain why it was missed in the interrogation carried out two or three months after the event.

Stiffness of the back and of the neck, sometimes amounting to rigidity, was likewise a noticeable feature in the early stages. Coupled with a more or less marked Kernig's sign it frequently raised the suspicion of meningitis and necessitated an immediate lumbar puncture. In all the cases where this was carried out there was a high lymphocyte count without, however, a corresponding increase of proteins or a diminution of the chlorides.

With regard to the "spine" and the "tripod sign," it was difficult to obtain the co-operation of the young patients, even in those cases where the general condition permitted their being sat up. It must be emphasized that this pain and stiffness were very early signs, and had usually disappeared by the time the child was admitted to hospital.

The localized pains came later when the paralysis was already established. The first case of poliomyelitis to be diagnosed (D. C.) was referred to me as a case of rheumatism. The patient had had fever and generalized pain, *which her mother did not mention at first*, 7 days before, and now she complained of very severe pain in the shoulder and arm, which were and have remained paralysed. The pain was eased as soon as the arm was immobilized in a raised and abducted position. I believe that these localized pains are of muscular or at least peripheral origin, and that they are due either to: (1) stretching of the paralysed muscles, (2) spasmodic contraction of surviving fibres, or (3) spasmodic contraction of unopposed antagonists. This type of pain was extremely rare among the patients admitted to hospital at an early stage, and I attribute this fact to the immediate, complete, and adequate immobilization, which was adopted as a routine when I took charge of the wards. I was anxious to give Sister Kenny's treatment a fair trial, but there was no opportunity to do so as pain and spasm were conspicuous by their absence. I can only remember one case (P. X., 10 months) where pain with spasm and flexion of both thighs persisted for more than one day after admission. The patient was given hot packs and massage, and the pain ceased when the limbs were gradually stretched out and splinted

in an extended position. The child has made a complete recovery.

A number of patients developed pain while in hospital, and this was invariably traced to immobilization in a faulty position. In one particular case (C. B.) there was pain, spasmodic contraction, and tenderness of the adductors of the right thigh which was relieved as soon as the limb was put in abduction. From conversation with doctors who treated patients at home I understand that pain was a more frequent symptom, and I have no doubt that this was due to the less rigid insistence on immobilization.

It is now generally accepted that the virus of poliomyelitis does not attack the higher centres and that cerebral and cerebellar forms do not occur. This is borne out by my experience in this epidemic. The convulsions mentioned in the paper occurred either at the beginning of the infection and were probably due to the thermal disturbance, or towards the end, when they were caused by asphyxia. In the article under review reference is made to vertigo and to "typical cerebellar symptoms" in one case. It is extremely difficult to make children explain exactly what they feel, and giddiness is a common symptom in many fevers. The absence of nystagmus, noted by the authors, would seem to exclude a cerebellar origin.

With regard to treatment, no specific or convalescent serum was available at the outset of the epidemic. Later on, when a supply of specific serum was obtained, no suitable cases presented themselves. Sulphonamides were not employed, as they had already been proved to be ineffective. Treatment by potassium chlorate was considered, but, in view of the conflicting reports and its undoubted dangers, it was not used. Reliance was placed on immediate and complete immobilization of the whole body in the neutral position until the initial extensive paralysis had settled down. Thereafter immobilization was confined to the limbs and parts which showed any weakness and was adapted to the individual needs of each case. The splints were extremely primitive, but they were the only ones available at the moment. Many of them were knocked up by the house-physicians, and by myself, on account of the acute shortage of labour at that time and the rush of patients requiring attention. After the first fortnight the splints were taken off once daily and light massage was given to all the muscles.

The results seem to justify the procedures adopted. A mortality of 3.5% is not too high (average 5% to 20%) and a complete recovery rate of almost 40% compares favourably with 25% mentioned by Lovett. To me, however, the most satisfactory feature was the almost complete absence of contractures while the patients were under my care. As stated by the authors, a most painstaking review carried out in March and April "revealed only two cases in which there was very slight contracture"—in a thumb and in a toe, I believe. In the present state of our knowledge paralysis cannot be prevented once infection has occurred, nor can axonal regeneration be accelerated by the means at our disposal. Treatment in the early stages resolves itself into the prevention of contractures and deformities. That much, at least, was accomplished, albeit with very primitive means, by a rigid and unswerving adherence to the policy of immobilization.

It is unfortunate that no mention was made of the cases with bulbar involvement (36). The loss of speech, the salivation, and the dysphagia mentioned under different headings were due to this. These cases presented a difficult and distressing therapeutic problem. It was difficult to adapt the Drinker respirator to these young patients, and where this was done the benefit was only temporary. The best results were obtained by nursing in the head-down position and by giving large, sometimes heroic, doses of atropine.—I am, etc.,

Malta. J. E. DEBONO.

Transmission of Infection during Withdrawal of Blood

SIR,—In an article in the *Journal* of May 5 (p. 625) Dr. K. Mendelssohn and Prof. L. J. Witts, stimulated by the occurrence of an outbreak of homologous serum hepatitis in Droller's diabetic clinic, discussed the possibility of transmission of infection during the withdrawal of samples of blood. They came to the conclusion that after aspirating blood from a vein and then releasing the tourniquet before withdrawing the needle in order to prevent the formation of a haematoma, a negative pressure is produced and some of the blood in the syringe finds its way again into the circulation. They proved this by the following experiment: A burette, connected to a short length of rubber tubing, which in its turn was connected to a glass tube provided with a tap, was filled with water, and the apparatus fixed so that the rubber occupied the lowest position. A few drops of a concentrated solution of methylene blue were drawn into a syringe, the needle fitted, the rubber punctured in the direction of the tap, and some of the water drawn into the syringe. When the tap was opened—which corresponds to releasing the tourniquet—the fluid flowing from it was noticed to be tinged with the dye.

The experiment is simple and convincing; in fact it was repeated with identical results, but it was thought that it might be of some interest to do it again in what might be considered a somewhat more natural way—namely, by slightly contaminating the syringe with staphylococci instead of drawing methylene blue into it and by filling the burette with sterile broth, taking care to sterilize the whole apparatus. Otherwise everything else was done in the same way as above. The fluid flowing from the tap was received in a sterile flask and incubated at 37° C. for 24 hours. Growth of staphylococci appeared, but was rather scanty, showing that the inoculum was small. Another burette, full also of sterile broth, was used, the rubber was punctured, the fluid drawn as before, and the needle withdrawn without opening the tap. This corresponds to the withdrawal of the needle from the vein before removing the tourniquet. The whole apparatus was then incubated at 37° C. for 24 hours; no growth appeared.

One point is worth discussion: is it always necessary, in order to prevent the formation of a haematoma, to release the tourniquet before withdrawing the needle from the vein? I find that by applying firm pressure on the site of the puncture immediately the needle is withdrawn, at the same time removing the tourniquet, a haematoma hardly ever occurs. Nevertheless it would be, as the authors put it, penny wise and pound foolish to economize in sterile syringes.—I am, etc.,

Faculty of Medicine, Cairo. M. A. GOHAR.

Excision of Patella

SIR,—A number of surgeons appear to regard removal of the patella not only as a highly satisfactory procedure but even as the operation of choice in fractures of this bone. On the other hand there are many who disagree strongly with this view and who resort to excision of the fractured patella only when severe comminution is present. That an excellent result may follow a properly conducted operation which includes excision of the bone none will deny. In too many cases, however, the result has been anything but perfect. Almost without exception I have found extension to be incomplete at the time of examination, usually within three or four months of the date of operation, even in those with an otherwise promising result. A common complaint is a feeling of insecurity on stairs and of stumbling on rough ground. Several of the results seen have been even more unsatisfactory, and in some the chances of a substantial improvement seemed small. Gross chronic swelling and thickening, marked limitation of both flexion and extension, and varying degrees of insecurity or unreliability of the joint have all been met with. One young woman, seen eighteen months after the operation, could negotiate stairs only with considerable risk of a fall; voluntary extension was incomplete by several degrees; flexion was complete but excessive. If the knee was allowed to flex beyond 35 degrees, while her weight was borne by the limb, she fell to the ground. A badly conducted operation, it will be said, and probably with truth, yet similar though less disastrous results are not so very uncommon. I am not denying excision is a sound procedure in badly comminuted fractures where it is impossible to restore the articular surface of the bone with anything approaching accuracy. The operation may also be indicated in a few carefully selected cases of osteo-arthritis.

My contention is that the patella is a useful bone, both as a protection to the joint and as an important part of the extensor apparatus, and, in the opinion of many besides myself, it should not be sacrificed, in whole or in part, when accurate suture is a possible alternative. Haxton (1945) has shown by experiment on the cadaver that "the patella improves the efficiency of

knee extension in the more important extended position of the knee-joint. . . ."

Certain advantages are claimed for excision in place of suture. It is true that the period of immobilization can be reduced and recovery of flexion may be accelerated after excision, but not without risk to the power of extension. The sutured tissues should be given time to unite. Too early efforts to restore mobility have been known to result in disaster. The statement that arthritic changes on the front of the femur are entirely eliminated cannot be accepted; gross arthritic changes have occurred after removal of the bone. Published experimental work on animals suggests such changes are not only probable but inevitable. Bruce and Walmsley (1942) using rabbits found that degenerative changes in the articular cartilage of the patellar surface of the femur followed removal of the patella. Cohn (1944), in two groups of rabbits, adult and young, confirmed this, changes in the cartilage being found in every animal after patellectomy. When only the lower half of the bone had been removed similar degeneration of the cartilage was seen in every adult rabbit, but not in the immature animals. The fact that excision is in many cases an easier operation to perform than accurate suture must not be given undue weight. Which operation is favoured must surely depend chiefly on a comparison of the late results of the two procedures.

So far as I am aware, no considerable series of cases of excision of the patella has been published to support the contention made by Brooke in 1936 that this operation gives better results than suture in transverse fracture of the bone. There is, however, some evidence to the contrary to support our personal observations. An investigation, Brig. Bristow tells me, into the late results in soldiers who had sustained a fracture of the patella showed that of 27 cases treated by excision only 11% were returned to duty in category A, whereas of 31 cases treated by conservative measures, including suture, 80% were returned in category A. These figures may be objected to on the score that more detailed information is required before accepting them at their face value. No doubt those treated by excision included a larger proportion of the more severe types of fracture than the other group. Even if allowance be made for the first group's being the result of greater violence than the second, the figures must surely be regarded as impressive.

Friberg (1941), dealing with cases of chondromalacia and of "adverse sequence of fractures" treated by excision of the patella, reported that the function after excision of the bone was "complete" in 84%, yet no less than 43.8% of his 32 cases complained of insufficient strength and want of reliability and stumbling on rough ground. Seven cases of excision of the patella were followed up by Wass and Davies (1942), and in every single one the result was poor. Unsatisfactory results do, of course, occasionally follow suture, but I believe they are less frequent than after excision, and they could be further reduced in numbers were more attention paid to accurate suturing. As an indication of what can be achieved by skilful suture I may quote Scudder and Miller, who in 1916 published the results in a series of 38 cases. Extension was full in 94% and flexion was full in 60.5%. In 63% capacity for work was unaffected. Mr. F. W. Holdsworth tells me that in a recent follow-up of a small series of 10 cases dealt with by suture he found that in all but one extension was complete, while in only one was flexion less than 130 degrees, and in the exception it amounted to 90 degrees.

When it is decided the bone should be removed much depends on the way the operation is completed. Though it is possible in cases operated upon early to suture the extensor tendon to the ligamentum patellae, it is not really necessary to do this, and probably, as some believe, it is undesirable if the return of full flexion is not to be jeopardized. It is, however, essential that the hole left in the capsule should be reduced in size and prevented from gaping by stitches and not simply covered over with what has been stripped from the front of the bone. The statement that the extensor tendon passes entirely in front of the bone every surgeon knows to be inaccurate. With regard to the care usually taken to keep close to the bone when dissecting out the fragments, attention may be called to the fact that Friberg and also Wass and Davies found that the appearance of more than a trifling amount of calcification and ossification at the site of the patella was a distinct disadvantage and interfered with recovery of function.

Lastly there is the question of removal of the smaller fragment when the bone is broken into two unequal portions. On what grounds it is maintained by those who practise this that the chances of arthritis are materially diminished it is difficult to see. It seems a pity to throw away a fragment which affords the best possible hold for the stitches and which, at the lower pole, may be entirely devoid of cartilage.

I am convinced that the best advice one could give a young surgeon would be to learn to suture the fragments of a fractured patella with accuracy and not to resort to excision of the bone in the hope of getting a rapid result.—I am, etc.,

London, W.1. H. A. T. FAIRBANK.

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The Edinburgh Outbreak of Smallpox, 1942

SIR,—Dr. A. L. Ferguson (June 30, p. 923), writing from South Africa, says: "The deaths from post-vaccinal encephalitis are regretted, but the deaths from smallpox would have been very much greater had not the population of Edinburgh been quickly and adequately protected by the measure of mass vaccination undertaken by the health authority." May I suggest that this assertion is really begging the whole question which it was the express object of my article to discuss. If, as I showed, the outbreak was definitely declining when the mass vaccination campaign was begun, what right has anyone to assert that the deaths would have been much greater?

Dr. Ferguson expresses surprise at the views I hold, but had he been living in this country he would doubtless have been aware of the great change which has taken place in medical opinion on the whole question of vaccination in relation to smallpox in recent years. Perhaps he will be even more surprised when he learns that the Minister of Health in this country, acting on the advice of his Medical Advisory Committee, proposes to terminate the present compulsory system of vaccination, and that the Council of the British Medical Association has agreed to the proposal. I can remember the time when any such proposal would have met with the very strongest opposition from the medical profession. To-day it is likely to meet with practically none, or, more probably, with a sigh of relief. Truly, *tempora mutantur, nos et mutamur in illis.*—I am, etc.,

Leicester. C. KILLICK MILLARD.

Sweating Sickness and Picardy Sweat

SIR,—In your *Journal* for June 2 (p. 792) an inquirer asks if anything is known of the aetiology of sweating sickness which was common in the fifteenth and sixteenth centuries. Your commentator replied that "Hamer gave reasons for thinking that the sweats were epidemics of influenza." The evidence which exists makes this conclusion improbable. A case of this disease which occurred in a soldier in Picardy in 1918 was recorded by the late Dr. Michael Foster in the volume dedicated to Osler on his seventieth birthday (*Contributions to Medical and Biological Research*, **1**, 52, Hoeber, New York, 1919). I discussed this case several times with Foster, and I also had a case under me in 14 Stationary Hospital for Infectious Diseases. Unfortunately the latter case was before Foster's, and the diagnosis was not made.

Sweating sickness first appeared as a new and previously unrecognized disease in 1485, when it attacked and caused a high mortality in the army of King Henry VII which had landed at Milford Haven from France. Between 1485 and 1551 there were at least four large epidemics in England. Caius in 1551 wrote the only medical account in the English language. After 1557 the disease completely vanished from England. Meanwhile it had appeared on the Continent, where it was known as *sudor anglicus*, but it subsequently disappeared for over 100 years.

From the beginning of the eighteenth century epidemics occurred in France of a disease which was called Picardy sweat or *suette miliare*. John Churchill the poet, whose death in 1764 is referred to by your correspondent, was taken ill at

Boulogne. Outbreaks with a high mortality occurred in 1840 and 1880. The last extensive epidemic was in 1906, when 6,000 persons were attacked in a few weeks in the Charentes area. This epidemic was studied by modern methods by a Commission under Chantemesse, but all investigations were negative.

The identity of Picardy sweat and *sudor anglicus* has often been discussed by French authors. The point at issue is the occurrence of an eruption in Picardy sweat, which Caius does not mention. Caius's "Boke" on sweating sickness is lengthy, but mostly consists of philosophical discourses and methods of preparation of herbal remedies. The clinical description is brief and applies to fulminant cases fatal within a few hours, in which type no eruption may develop. But the symptoms which Caius describes recur constantly almost word for word in the French literature of Picardy sweat, and were present in Foster's case. With regard to influenza, Chantemesse assured Foster that there was no resemblance between the two diseases. Certainly the two cases here referred to were not influenza. With plague it has no connexion. There is no substantial reason to doubt the identity of *sudor anglicus* and Picardy sweat.

The epidemics are explosive. They reach their maximum in a few days, maintain it for two or three weeks, tail off, and then completely leave the locality. The case mortality is very variable. In some epidemics the symptoms have been mild and there have been practically no deaths, but in many others the mortality has reached 30 or 40%. The epidemic of 1906 in Charente wiped out whole families in a few days. Deaths are almost confined to fulminant cases, and a fatal ending is rare after 48 hours. Rural areas are affected, and large cities are not attacked. It is not particularly an epidemic of warfare. The Commission of 1906 decided against direct contagion from person to person and attributed infection to the fleas of field mice.

As to the clinical features, the sweats are extraordinarily profuse and are independent of the height of the temperature or of its rise and fall. There are other symptoms which still exhibit the characters described by Caius: paroxysms of precordial pain with sensation of constriction in the chest and upper abdomen, feelings of suffocation and great distress, but there are no catarrhal symptoms and no abnormal signs in the lungs, heart, or cardiovascular system. There are curious sensations in the limbs and joints as of air moving—a description given by Caius, repeated by French authors, and accepted by Foster's patient. In the fulminant cases delirium and collapse rapidly develop, and death often occurs within a few hours of the onset of symptoms.

The eruption appears on the third or fourth day, or occasionally later. There are two factors—an erythema, and glistening white miliaria, which has led to the name *suette miliare* or miliary fever. The miliaria coalesce and form vesicles. The rash starts on the neck and trunk and spreads over the whole or most of the body. The rash has one curious characteristic: it stops at the wrist as if prevented from spreading further, and forms the miliary bracelet, which persists after the eruption has subsided elsewhere. This was present in both the cases in 1918. The eruption lasts a few days and is followed by desquamation. Convalescence is slow, but there are no sequelae.

Such is the disease which at one time was feared even above plague. We may bear in mind Foster's warning: "We should be unwise to regard it as necessarily a disease nearing extinction."—I am, etc.,

London, W.1. HENRY TIDY.

March Fracture

SIR,—The frequency of march fracture (of the foot) and the line of treatment advocated by some are on occasion leading to this injury's being treated rather lightly, with the result that the number of cases coming to my notice where a march fracture has been diagnosed and the soldier kept on duty is increasing. That march fracture is a painful condition most will readily agree, and why the Service man with this disability should be kept going on an admittedly painful foot is difficult to determine. Whatever may be the structural defect which predisposes to the condition it must be admitted that the occurrence of the fracture does not remove it, and continued weight-bearing can do further damage to the foot itself, to say nothing of the effect of the continued pain.

Recently I have seen three cases of multiple march fracture in the same foot, and in all the history has been the same: either the first fracture was overlooked or, if it was diagnosed, it was disregarded and the man kept on his normal or slightly modified duty. In addition I have seen two bilateral cases with very similar histories. The case described below illustrates well the course of events, although this was the only case in which three fractures in one foot were found.

C. E., aged 18; service 6 months Grade A1. After six weeks' training, towards the end of Dec., 1944, he developed a pain in the left foot during a route march. March fracture was diagnosed and *x*-ray examination confirmed a fracture of the third metatarsal. He was kept off duty for one week and then returned to training. After a week or two he had some further discomfort in the foot, which had never been entirely free from pain, but managed to carry on and complete this part of his course. At the beginning of May, 1945, he again had severe pain in the left foot when marching; he reported sick and was referred to hospital, where *x*-ray examination revealed this most interesting condition: third metatarsal, a healed fracture; fourth metatarsal, a partly healed fracture; second metatarsal, a recent fracture. *X*-ray examination of the right foot revealed no abnormality.

Whether march fracture when first discovered should be treated by simple relief from weight-bearing, by plaster fixation without weight-bearing, or by walking plaster, is probably a matter of personal preference, but all these methods do relieve the man's pain and would prevent multiple fractures; I believe that one or other of them should always be employed, and that keeping infantrymen on duty can hardly be justified.—I am, etc.,

Lancaster. IAN D. KITCHIN.

An Occupational Therapy Department

SIR,—We have recently re-established at Maida Vale Hospital for Nervous Diseases a Department of Occupational Therapy, directed by a member of the Association of Occupational Therapists. This department is now open to receive out-patients from other hospitals, whether neurological, orthopaedic, or general, which lack occupational therapy facilities, or whose facilities are too far from the patients' homes for out-patient attendance. Private patients also are received. I think that the facilities offered by the department, being unusual in Central London, ought to be made known as widely as possible.

The department is well equipped for cases with physical and nervous disorders. Its facilities, when complete, will include evening sessions for those back at work, a children's room, and a homebound service for non-ambulant cases. The charge made is 2s. per patient per session, payable by the sending hospital, except private patients, who are reasonably assessed. Patients are received only on medical prescription, forms for which will be sent on application to the occupational therapist, who will also be glad to show the department to and to discuss possible scope with anyone interested, especially those who may not so far have utilized this treatment. Patients receiving occupational therapy may also, if desired, attend for speech therapy and other rehabilitation departments, which work in conjunction with the Department of Occupational Therapy.—I am, etc.,

WILFRED HARRIS,
London, W.9. Senior Physician, Maida Vale Hospital.

The Integration of Medicine

SIR,—The oration on the integration of medicine by Dr. F. M. R. Walshe, an abridged version of which was published in the *Journal* of May 26, appeared to concern itself more with the general foundations of scientific knowledge than with those simple acts of medical judgment which constitute the bulk of medical practice and in which all medical research culminates. Dr. Walshe deplores the lack of integration of scientific facts "beyond the basic elements of medicine as we know it"; are not just these basic elements at stake when we attempt to assess the scientific foundations of medicine?

The distinction between "liberal" and "useful" professions does indeed throw into relief the unique nature of the physician's work. Even if biological research were to conform to the high standard of integration demanded by Dr. Walshe, the fruits of research would still have to pass the test of clinical application in each individual patient. Research is invalidating,

or at least questioning, an increasing number of "basic principles"; the scientist shrugs his shoulders at the physician who rests the heart by keeping the patient flat in bed, or applies warmth to every case of surgical shock. However well ordered the results of physiological research may be, however conscious the physiologist himself of the limitations of his science, doctors—everywhere and every day—practise their professions according to their lights.

By charging "clinical observation," "intuition and judgment," with the task of integrating medicine Dr. Walshe admits that medicine is not a science, nor must the so-called doctor–patient relationship be regarded as a mythical panacea, invoked whenever the doctor's status as scientist is in doubt. Semi-scientific activity of any kind does not derive sanction solely from the fact that it leads to the desired result from the patient's point of view. So far as human values and the sanctity of the individual are concerned, there is little to choose between the performance of controlled experiments on patients and the waving of the magician's wand. The doctor alone is not qualified to decide where liberal knowledge ends and useful knowledge begins. Around that decision revolves the practice of our profession. On that decision more than on anything else the integrating power of science must come to bear.

The material on which we work is human as we are ourselves. A weapon is thus placed in our hands of which the other sciences do not dispose. The will to live, so essential to the cure of any illness, could be transformed from an instinct into active co-operation by the patient if he were taken into the doctor's confidence more often. Many precepts of medical science could then be applied more rationally, many placebos dispensed with completely. Intellectual honesty of the doctor must naturally not be prejudicial to the patient's happiness or its object will be defeated; but the public must be made aware of the double orientation of the doctor if the fog that envelops us on our travels between bedside and laboratory is ever to lift. Ideally, the integration of medicine will take place when physicians have ceased to be necessary.—I am, etc.,

P. FRANKEL,
Capt., R.A.M.C.

B.L.A.

Belsen Camp

SIR,—I know it was impossible for Dr. W. R. F. Collis (June 9, p. 814) to include everyone in his excellent article on Belsen, but a tribute should be paid to Lieut. F. J. Murray, to Paul Dupont who offered his services as a stretcher-bearer, and to personnel of "D" Platoon, 567 Company R.A.S.C. (American Field Service). This unit, consisting of volunteers from the U.S.A., carried out magnificent work in helping us to clear the horror camp. Nothing was too big for them, and I have never known men so hungry for work or more willing to co-operate in any task.—I am, etc.,

M. W. GONIN,
Lieut.-Colonel, R.A.M.C.

B.L.A.

Bureaucracy and the Control of Medical Appliances

SIR,—For about two years medical supplies reaching this country from America have been on a "Lease-Lend" basis, and subject to the control of the Ministries of Health and of Supply. Many of the profession may not be aware that if they desire to purchase a product from the U.S.A. through one of the various instrument retailers these firms are not at liberty to order and sell such articles as they feel disposed to do, but are under orders from the above Ministries as to purchase and disposal, and, in fact, have become styled "agents for the Ministry of Supply." The muddle and chaos that customarily occur when bureaucracy takes a hand in trying to control and direct the affairs of private enterprise have again become evident in this particular field.

In my own experience the interior of an *x*-ray tube, known as the insert, was ordered officially in November, 1943, and was delivered to the hospital concerned in May, 1945—only 18 months overdue. In May this year a certain type of *x*-ray tube insert was requested, but the Ministry appeared to be out of stock of the particular article, and released a substitute with the implication that it could be accepted or left, as there was nothing else to offer. This substitute lasted exactly 30 days, and each new insert costs £55 per tube, although in fairness to the Ministry of Supply it is recorded that full allowance is to be made for the tube that lasted 30 days. The Ministry, of course, have very carefully absolved themselves from all responsibility as to the honesty of the state or manufacture of the product by inserting a clause in their contract form that: "This material is Lease/Lend and there is no guarantee or warranty given." I wonder if our American friends know of this gross injustice regarding their products and their sale conditions in this country. I do know, however, of the indignation of their British "agents." As the result of the above failures a third insert tube was ordered from the Ministry, and, amazing as it may appear, they still had not a supply of the particular article and offered yet another variety and a third type. I could enumerate other medical appliances that have been on order for over 18 months, but to date there is no sign of release by the Ministries concerned.

In 1943 a deputation of representative members of the British Institute of Radiology to the Ministry of Health discussed this matter of defective supplies of *x*-ray equipment which was then being felt throughout the country. The Ministry gave some assurance that the defect would be remedied, but to-day chaos continues. Further, the B.I.R. asked for representation on the appropriate committee controlling these matters, but the request, made on two separate occasions, was refused. As far back as 18 months ago these tubes and spare parts were being manufactured in America in adequate quantity for the requirements of both U.S.A. and Great Britain, and they only needed collection. The usual plea of shortage of shipping space was put forward by the Ministry, and still apparently is the excuse to-day. I suggested then that these parts occupying very small space could (and can now) reach this country in many of the almost empty aircraft coming here, and at one time landing at the rate of so many per hour daily. Some Americans are amazed at, in fact suspicious of, our lethargy in failing to collect these precious articles.

I need not dwell on the implications these facts have for a full-time salaried health service. We are a very tolerant people in this country, but surely even the Director-General of the E.M.S. cannot tolerate this continued state of inefficiency and mismanagement. How much longer are we to be subjected to unnecessary and humiliating control? The firms concerned are quite competent to resume the individual control of their business and to order the right types and adequate supplies of the goods which they know, much better than the Ministerial mind, are required for the smooth running of the profession in this country. The public must also suffer if the doctors are to be denied the tools with which to carry out the work.—I am, etc.,

NORMAN P. HENDERSON.

London, W.1.

The Beveridge Report

SIR,—In this report, which is so universally accepted, there is a grave fallacy which the medical press at least should notice. It contrasts the crude mortality of London in 1900 and 1935—namely, 18.6 and 11.4 respectively—as evidence of progress. Crude rates, especially of single towns and years, have value for generalization in only one respect—they suggest a weak case. It is so here. The standardized rates for England and Wales) were for 1891–1900 and 1901–10 respectively 18.1 and 15.2. Such a rate of fall, continued for twenty years, would of itself have brought us by the end of 1930 to less than London's crude rate of 11.4. But it was gaining speed; the work of last century was beginning to tell in the elder groups, and 45, 55, 65 were all diminishing instead of increasing the national mortality, and for the second half of the decade the rate was only 14.4, falling in 1910 to 13.2. That set a norm henceforward; and for 1911–15 it was only 13.8, though, including two years in which the burden of the Insurance Act was plain, one of them also having its figures based on civilians only—i.e., on a residuum of the less fit. In 1912 it fell to 13.0; had we then enjoyed the same low birth rate and infant mortality as 1935 the low record would have been equalled. In any case in 12 years before the Insurance Act progress was about four times as fast as in the 23 years after, when the State was very active in benefactions. The argument is a poor one for extending the Act, but a powerful one for making it optional.

The great advance of medicine in all branches in this century would naturally suggest speeding up rather than slowing of

progress; and in the case of the well-to-do no one suggests it has been slowed. Nay, all the State solicitude aims at providing for poor people what the rich can provide for themselves. That the provision does not reach the poor is plain; our infant mortality, according to Mr. Titmus, is higher than in any other civilized country *among the poor*; and at no time in this century, said Sir George Newman, has the mortality of youth fallen so rapidly as it did in 1860–90; and in 1911–20, for the first known time, death discriminated against the young.

That, by ensuring a rising standard of real wages and leaving the rest to science and to the people themselves, Government can ensure a rising standard of health was conspicuously shown last century; and by two remarkable control experiments in the two great wars, which, for the first known time, moved poverty from the poor. The commentary of the Registrar-General's annual report for 1919 shows how from 1916 onwards there were established a series of low records of mortality—that is, after the money wages had overtaken the rise in prices; and the course of events in this war has been similar. Sir William Beveridge himself (par. 461) has upset the whole report. He says, "Freedom from want cannot be forced on democracy nor given to democracy; it *must be won by them*." That is true, and he speaks as responsible for the dictum. Could the report have been written with that for text instead of belated confession?—I am, etc.,

London, S.E.26. B. G. M. BASKETT.

Electro-convulsive Therapy Apparatus

SIR,—From a letter in the *Journal* of June 30 (p. 926) I gather that there is some dispute as to the technical performance desirable in electric convulsion therapy apparatus. I should like to pour oil on these troubled waters to some extent by pointing out that the conditions for satisfactory working are not nearly as critical as was at first supposed. From experiments made both in this country and abroad it would appear that the ratio between the average convulsive "dose" and the minimum lethal dose of electric current is at least 1–50, in respect of duration, so that even the simplest switch apparatus would seem quite adequate for both convenience and safety.

The importance of exact measurement of patient-resistance has also been somewhat exaggerated, since this resistance bears little or no relation to the convulsive threshold and actually serves only to satisfy the operator that the patient circuit is continuous and that no leads are frayed or broken.

In electromedical subjects it would seem most important to establish at an early stage of development the limits of accuracy and intricacy which are desirable in any particular type of equipment. In some fields there is a tendency to under- and in some to over-design. Both tendencies are harmful, since the one leads to untrustworthy results and the other to excessive cost and restricted scope.—I am, etc.,

Bristol. W. GREY WALTER.

Alien Doctors

SIR,—In three successive issues of the *Journal* letters have appeared referring to foreign doctors in what can be only described as hostile terms. In that of June 30 (p. 927) Dr. Wm. A. O'Connor went further and reference was made to "what Major Stallard euphemistically refers to as Central Europeans" and "'Central European' doctors and other strange importations." It is difficult to appreciate quite what is meant by these phrases, and one wonders whether the Irish who have remained neutral throughout the war are included. We have just ended a war in Europe against the leading exponents of the race theory, and it is with some misgiving that one reads letters of the type to which I refer.

There are three points which I would like to raise. In the first place every doctor who can practise in this country is serving this country; there can be no doubt about this. Furthermore, the Central Medical War Committee can control almost entirely what work every doctor does. Secondly, it should be possible for you, Sir, to publish how many "foreign" doctors are employed in this country—i.e., those who come under the category of "refugees"—and also how many practise in the coveted area of which Harley Street is the centre. What percentage these doctors represent of the total doctors in that area can also be determined. This information should be obtainable from the Central Medical War Committee. Thirdly, what exactly is the position regarding the return to Europe of these doctors? I understand that our own Government is not prepared at present to allow the return even of those who want to go.

I think it is most irresponsible to raise the question of the position of the refugee doctors unless the facts are fully known, and the writers of the letters referred to could not have possibly known the facts. It is too easy to stir up unjustifiable hostility to foreigners. Besides, this country has always boasted of its granting asylum to refugees, and our profession has liberal traditions of which it is proud.—I am, etc.,

J. JOSEPH,
University College, London. Captain, R.A.M.C.

Education of Nurses

SIR,—I would like to endorse whole-heartedly the views expressed by Mr. A. Wilfrid Adams (June 16, p. 857). In this connexion may I draw attention to the syllabus of the Queen's Institute of District Nursing? Apparently, trainees who are already qualified nurses on the General Part of the Register are to have a six-months smattering in all sorts of subjects, ranging from district nursing and social science (whatever that may be) to blood pressure, including an "explanation of high and low blood pressure" and "method of taking blood pressure." On the other hand, only two lectures "by medical officer of health or specialist" are devoted to infectious diseases. There are to be eight lectures on public health legislation and administration, two on psychology, two on nutrition and dietetics, four on tuberculosis, four on hygiene, and one or two on V.D. The syllabus is a good example of an overloaded and ill-balanced curriculum.

It would seem that the education of nurses has somehow got into the hands of the wrong people, and that the needs of the patient and the medical practitioner are overlooked. Is it not time that the medical profession not only expressed its views but took steps to make them felt?—I am, etc.,

Exeter. G. B. PAGE.

The Services

Col. the Right Hon. Walter E. Elliot, *M.C.*, M.B., F.R.C.P., F.R.S., former Minister of Health, has been appointed Honorary Colonel of the Royal Corps of Signals, Territorial Army, in succession to Lord Stevenson.

Major-Gen. E. Phillips, C.B.E., D.S.O., M.C., late R.A.M.C., has been appointed C.B. (Military Division) in recognition of gallant and distinguished services in North-West Europe.

Fl. Lieut. R. Logan Ewing, R.A.F.V.R., was mentioned in dispatches in the 1945 New Year Honours and was appointed M.B.E. (Military Division) in the recently published Birthday Honours. Squad. Ldr. H. T. Macaulay, R.A.F.V.R., was mentioned in dispatches in the Birthday Honours published last month.

Flight Lieut. (Mrs.) Phyllys P. Pigott, R.A.F.V.R., has been mentioned in dispatches.

Major G. Singh, Jaipur Medical Service, Indian State Forces, has been awarded the D.S.O. in recognition of gallant and distinguished services in Italy.

CASUALTIES IN THE MEDICAL SERVICES

Missing.—Acting Squad. Ldr. Robert William Stanley Marshall, R.A.F.V.R.

DEATHS IN THE SERVICES

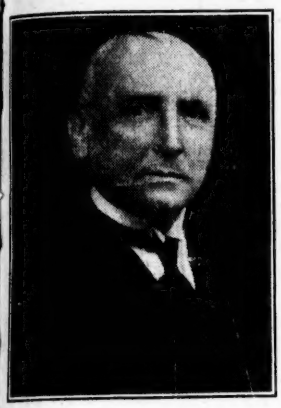
Capt. ST. GEORGE EYRE HARRIS, O.B.E., who served continuously with the R.A.M.C. as a temporary and war substantive officer from 1915 onwards, died at Farnborough on May 27, aged 68. He studied medicine at Trinity College, Dublin, graduating M.B., B.Ch. in 1899 and M.D. in 1902, and was for a time resident medical officer at the National Sanatorium for Consumption, Bournemouth. At the beginning of the last war he was senior surgeon to a French hospital at St. Malo and from 1917 to 1941 was associated with the Cambridge Hospital, Aldershot—as ear, nose, and throat specialist for most of the time. From 1941 he was employed on medical boards. Capt. Harris's long service with the Corps made him widely known to officers of the regular R.A.M.C.

Obituary

THOMAS BEATTIE, D.C.L., M.D., F.R.C.P.

The death, at the age of 77, of Emeritus Professor Thomas Beattie removes an outstanding figure from the medical profession of Newcastle-upon-Tyne. He was a native of the city, his father, Alderman John Beattie, being mayor in 1900. His whole professional career was spent in association with the Royal Victoria Infirmary and the University of Durham College of Medicine in Newcastle.

He qualified in 1890, gaining first-class honours in the final M.B., B.S. examination; in 1895 he was awarded the gold medal for his M.D. thesis. He became a Member of the Royal College of Physicians in 1898 and was elected a Fellow in 1915. Passing through the usual resident posts he became honorary assistant physician, honorary pathologist, honorary physician, and was made consulting physician in 1927 on his retirement from the active staff. In the Medical School he filled various posts—lecturer in materia medica, professor of therapeutics, lecturer in medicine, and finally professor of medicine. In 1935 he received the honorary degree of D.C.L. from the University of Durham.



It may be fairly said that his passing removes the last link with the older school of physicians of Newcastle. His precise and painstaking manner in clinical teaching, together with his outstanding physical attributes and personality, have left a lasting impression on his colleagues and numerous generations of students. He took an active part in local medical affairs, passing through the presidential chair of the Northumberland and Durham Medical Society and also that of the North of England Branch of the British Medical Association. At the Annual Meeting of the B.M.A. in 1921 he presided over the Section of Medicine. During the 1914–18 war he served as lieut.-colonel in the 1st Northern General Hospital in Newcastle. His later years were beset with physical difficulties which he bore with stoicism and without any alteration in his habits or manner. He died in the hospital he had served so long and well. A memorial service was held on June 28 in St. Luke's Chapel in the Royal Victoria Infirmary. It was attended by many old colleagues and members of the House Committee.

Prof. G. GREY TURNER writes:

Dr. Thomas Beattie was a well-known physician in Newcastle-upon-Tyne and the North Country, and by his death a notable personality has passed on. Beattie was from first to last a Newcastle product. He was born in that city 77 years ago and obtained his early education at the Grammar School. His medical education was carried out at the University of Durham College of Medicine, which has always been located in Newcastle. During his academic career, which was very successful, he gained many prizes, scholarships, and other distinctions. After obtaining his university degree he held a long series of resident posts at the Royal Infirmary extending over five years, and was also secretary to the medical staff. These years furnished a wonderful opportunity for one with the capacity and avidity to profit by what was happening in a great institution which has always been a storehouse of clinical material. His career at that stage was an apt reminder of William Hunter's remark that "were he to make a man truly great in his profession, he would place him in a great hospital where he might attend the sick and dissect the dead," which is just what Beattie did, using his abundant opportunities to the utmost. Beattie was always a great student of morbid anatomy, and after leaving the house and returning as a member of the staff, his first post in 1895 was as pathologist. In that appointment he carried out his work with great diligence, making all the post-mortem examinations himself. He spent hours in the dead-house conducting each examination with minute thoroughness and inculcating in his clerks those powers of observation which he had so highly developed. In 1897 he became assistant physician, and continued on the medical side until his retirement as senior physician on attaining the age limit in 1927; thereafter he was promoted as consulting physician. Though he filled other offices he never allowed anything to interfere with what he considered the major business of his life—his work at the Infirmary. During the 1914–18 war, with the rank of lieut.-colonel, he did an enormous amount at the 1st Northern General Hospital, including a much larger share of medical board work than fell to the lot of other members of the staff. Everything that he did in his military capacity was carefully recorded, and his reports, written in his own hand, were a model of accuracy and fullness. After retiring from the staff at the Infirmary he became director of the medical division at the Newcastle General Hospital, and there he continued the same high standard of clinical work. At the College of Medicine he held the lectureship in therapeutics until on the retirement of Prof. Oliver from the chair of medicine he was appointed and occupied that position for seven years. His lectures were good and were valuable for those who already possessed a good groundwork, but they were not of the same high standard as his bedside teaching.

Beattie was happiest when working late. He and I often met at a near-by letter-box in the old days just before midnight and there, standing in the open air, Beattie would always be willing to talk for quite a long time about some experiences of the day or to expound something that had bearing on cases of interest or current medical affairs. He never lost interest in surgery, and it was indeed a happy experience to meet him in consultation, to talk over the problems presented, and to have his critical eye on the operative field and in the analysis of the subsequent events. As a young man he had a tuberculous pulmonary lesion which compelled him to stay for a year or more in Switzerland, where he co-operated so thoroughly in his own treatment that a lasting cure resulted. This experience directed his attention to chronic pulmonary diseases, and was reflected in his own management of similar cases. His knowledge of tubercle in all its forms was very wide. He wrote little, but his apparent neglect in that respect was founded on a conviction that there was always so much more to be learnt that it was dangerous to commit to writing what might be improperly digested knowledge, and possibly misleading to younger men. As an examiner he was very fair, and though possibly a little terrifying to the candidate, he appreciated honest effort. As a physician no one could have spent more time and trouble in bedside investigation, which was then and for long afterwards the vogue. Up to the end of his hospital days he was rather suspicious of the ancillary aids, and he tended to lag behind what was becoming current practice in those fields. But his knowledge of disease and its natural history was very extensive, and few men could have had a greater practical experience. It was not that he belittled or scorned additional aids, but he early detected the tendency to allow these methods to replace clinical examination, and to this he would never yield. He applied with great thoroughness those lessons he had so well learned during his early studies in the wards and the dead-house. With Beattie there was never any hurry, and he would take no end of pains to establish a diagnosis. He trained his house-physicians in the same careful and thorough manner, and he expected from them a very high standard of ordinary clinical work. This thoroughness was the great characteristic of all his work. Time and place made no difference, and whether in the convenient atmosphere of the hospital or late at night in the surroundings of some small country home his standard never relaxed. In his management of patients he was sometimes accused of being rather harsh, but it is certain that he never proposed any discipline more rigid than he would have applied in his own case. Thomas Beattie was a most helpful consultant, and many of us are grateful for his assistance in times of difficulty. He was very easy, almost careless, about fees, especially if his interest was aroused in some clinical problem. After his retirement and indeed up to the outbreak of this war Beattie was regular in attendance at meetings of the house committee of the Newcastle Infirmary. Until his health broke down about two years ago he had been actively occupied as president of recruiting boards. Whatever he undertook—and his professional occupations were many—he carried out to the utmost of his capacity and according to his own rigid interpretation of his duty. Throughout life he had to face a succession of personal trials, but these he bore unflinchingly and with great courage, and no one ever heard him complain.

EDWARD BARCLAY-SMITH, M.D.

Emeritus Professor E. Barclay-Smith, for many years one of the pillars of the Anatomical Society of Great Britain and Ireland, died in London on July 5, aged 84. In 1927 he resigned the chair of anatomy in the University of London, tenable at King's College, where he was also for some years Dean of the Medical Faculty; he had been chairman of the Board of Intermediate Medical Studies, and of the Board of Human Anatomy and Morphology in the University, and represented the Council of the College on the committee of management of King's College Hospital.

Edward Barclay-Smith—son of Capt. W. E. Smith, a musketry expert, and Louisa Barclay, daughter of a naval

officer—was educated at Brighton College and Downing College, Cambridge. After clinical training at the London Hospital he took the M.A., M.B., B.Ch. degrees in 1890 and proceeded M.D. three years later. Returning to Cambridge he became demonstrator under Prof. Alexander Macalister and won the regard and admiration of a long line of students in the dissecting room; later he held the position of lecturer in advanced human anatomy at Cambridge before his appointment at King's College, London. His gifts as a teacher and organizer were widely recognized. He edited several editions of Buchanan's *Manual of Anatomy* and saw Buchanan's *Dissection Guide* through the press; he was for many years an active member of the editorial committee of the *Journal of Anatomy*; and he examined in human anatomy for the Universities of Cambridge, Durham, London, Manchester, and Birmingham, and for the English Conjoint Board.

Barclay-Smith had been a member of the Anatomical Society for well over 50 years and held office as treasurer 1931–7, and as secretary for the very long period 1919–38; he declined its presidency in order to carry on in the congenial post of secretary. He wrote a short but valuable history of the society and assisted in the preparation of its *Proceedings*. In all his work for the society and for the advancement of its aims he constantly sought to help and encourage younger members. He was also a member of the Association des Anatomistes.

Mr. JOHN ALLISON PANTON, F.R.C.S., senior honorary surgeon to the Southport Infirmary, died suddenly on July 1. He had a brilliant career as an undergraduate of the Victoria University of Manchester, winning the Tom Jones exhibition in anatomy, and gold medal, and the senior Robert Platt exhibition in physiology in 1913. On graduating M.B., Ch.B. in 1916 he was awarded distinction in obstetrics and gynaecology and bracketed equal for the John Henry Agnew scholarship in diseases of children. He held a temporary commission in the R.A.M.C. for over three years and then became resident surgical officer at Ancoats Hospital, demonstrator in anatomy in the University, gynaecological house-surgeon and acting resident surgical officer at St. Mary's Hospital, Manchester, and surgical registrar at the Royal Infirmary. In 1921 he received the gold medal for his M.D. thesis and four years later took the Ch.M. degree and the Fellowship of the Royal Colleges of Surgeons of England and Edinburgh. After a short period at Bolton he joined the staff of the Southport Infirmary as honorary anaesthetist and later as honorary surgeon. Mr. Panton was an active member of the Manchester Medical and Surgical Societies, and was for three years honorary secretary of the Southport Division of the B.M.A. He published in the *Journal of Anatomy* a paper on factors bearing upon the aetiology of femoral hernia.

Mr. DAVID DAVIES, consulting ophthalmic surgeon to the Kent and Sussex Hospital, Tunbridge Wells, who died on June 18, aged 72, was a student of University College Hospital, qualifying in 1898 and taking the M.B.Lond. a year later. After serving as house-surgeon and ophthalmic assistant at U.C.H. he became chief clinical assistant at Moorfields Eye Hospital and later set up in practice at Tunbridge Wells. Besides his work at the general hospital he was ophthalmic surgeon to the borough council schools, to the Hermitage Training Home at Uckfield, and consultant to the Crowborough Cottage Hospital and other local institutions. David Davies joined the B.M.A. in 1902 and was honorary secretary of the Tunbridge Wells Division from 1918 to 1934, acting in a joint capacity for the last three years. He was a member of the Ophthalmological Society of the United Kingdom.

Dr. GEORGE WALLACE EUSTACE, who died in London on June 18, was a former mayor of Arundel, Sussex, author of a history of the borough and castle, and chairman for thirteen years of the county bench. Born at Donnybrook, Co. Dublin, on April 25, 1870, son of Marcus Eustace, F.R.C.P.I., he was educated at Corrig School, Kingstown, and Trinity College, Dublin, where he graduated B.A. in 1891, M.B., B.Ch., B.A.O. in 1893, and M.A., M.D. in 1898, after winning a senior moderatorship and gold medal in natural science and first-class honours. From 1894 to 1921 his practice was at Arundel. He saw active service in the South African War, and in France and Flanders with the Sussex Yeomanry during the last war as captain, R.A.M.C., and was awarded the Military Cross. In 1921 Dr. Eustace became regional medical officer under the Ministry of Health, retiring in 1927. He had been on the staff of the Arundel Cottage Hospital and honorary radiologist to the Royal West Sussex Hospital, Chichester. He joined the B.M.A. in 1894, and held office as chairman of the Chichester and Worthing Division twenty years later. He was devoted to fishing and field archaeology and published a number of articles on the antiquities of West Sussex. During the present war he had been medical officer to the R.A.F. and W.A.A.F. camp two miles from his home.

Dr. EDGAR JAMES TYRRELL, who practised in the City of London for many years and undertook much work for insurance companies, died on June 16, aged 66. He was educated at the University of Durham College of Medicine, Newcastle, graduating M.B., B.S. in 1915, and afterwards took the Cambridge D.P.H. and the D.M.R.E. In the Durham examinations he won honours and university prizes. He had served as a private in the R.A.M.C. during the South African War and held a commission as captain in 1915–17; for four years after the armistice he was medical referee under the Ministry of Pensions for the borough of Fulham. Dr. Tyrrell had been clinical assistant in the electrotherapeutic and *x*-ray department of the West London Hospital and at the Lock Hospital, and took a special interest in skin diseases, winning the Chesterfield medal in dermatology at St. John's Hospital in 1924. A correspondent writes: The death of Dr. Edgar J. Tyrrell deprived the City of London of a well-known character. Affectionately known as "The Stock Exchange Doctor," he had practised at 33, Cornhill since 1918, chiefly among the insurance offices and other companies, many of whom regarded him not only as a valued adviser but as a beloved friend. He left his Devonshire home as a youth to serve as a dresser during the Boer War, and afterwards spent some time in various ventures in South Africa. Returning to England he took his degrees at Durham University, and served as an R.A.M.C. officer in the last war but was invalided from the Army after the Somme battle of 1916, with a heart so much impaired that he was told by a distinguished consultant to "run away and play, for he had only six months to live." A born fighter, he determined to cheat the prophecy, and from then until six months before his death he devoted himself to his city practice, although handicapped by increasing ill health. The declaration of war in 1939 found him over age for Government service in any form, but he resolved to stand by the companies whose interests were so near his heart, and even when a bomb fell just outside his offices he continued his visits to the city under utmost difficulties, and at the cost of a severe strain on his enfeebled health. Only most urgent symptoms at last induced him to seek medical advice. A severe operation was followed by six months of extreme suffering, which he bore with a calm fortitude inspired, as was his whole life, by a humble and sincere religious faith.

Dr. MARTYN CECIL BEATTY, who practised at Broadway, Worcestershire, for the past fifteen years, has died in Evesham Hospital at the age of 70. After graduating M.B., Ch.B.Ed. and taking the D.P.H. he served in the R.A.M.C. for thirty years, reaching the rank of lieut.-colonel. He saw active service in the South African War, and after being stationed in Northern Ireland, in India, and at Plymouth, went to France with the first Expeditionary Force, and later to Egypt and the North-West Frontier, and joined the Army of Occupation at Cologne and Wiesbaden. During this war he lectured and helped to train members of the first-aid post at Broadway and was on the panel of doctors examining recruits at Worcester.

Dr. G. H. Pringle, M.O.H. for Bridgwater, writes: It was my privilege to work with Dr. H. J. PHILLIPS as his deputy in Worthing from early in 1939 until the summer of 1941. His administrative ability and flair for organization were outstanding assets, though his talent was by no means limited to this sphere. As a clinician he was at his best at the borough isolation hospital. The outbreak of war brought with it the heavy burden of evacuation, and to add to the difficulties the trend of events meant that Worthing, in a short period, not only ceased to be a reception area but an official evacuation took place. This sudden change from apparent safety to the danger of a front-line town put a heavy strain on the C.D. organization's casualty services, which had to be rapidly augmented. Thanks to Dr. Phillips all these difficulties were successfully overcome. As can be expected from a hard worker, Dr. Phillips had no time for slackers, though he always showed the greatest consideration to all members of his staff. In his scanty leisure hours I have happy recollections of an occasional game of tennis in his lovely garden, and, even in the dark days of the autumn of 1940, lively discussions on our common hobby of philately. I look back on my time in Worthing as an education in sound and tactful administration. By the sudden passing of Dr. Phillips I have lost a good friend, and a progressive borough has lost a progressive medical officer of health.

Universities and Colleges

UNIVERSITY OF BIRMINGHAM

At a Congregation, held on June 30, the following medical degrees were conferred:

M.B., CH.B.—*J. R. G. Bastable, *J. L. Stafford, †L. D. Abrams, A. F. Alvarez, H. J. Bagnall, Clarice E. Butler, J. M. Crossley, Muriel J. Davies, Helena M. Ellis, R. H. Freeman, Doreen E. George, R. L. Greenwood, Zoe Hartley, P. Hogg, G. B. Hopkins, G. Hoyle, ‡J. G. Jackson, A. T. Johnson, Barbara D. King, J. D. Lacon, R. S. Male, Joan Marsden, Martha H. Martin, ‡Doreen M. Matthews, Hilda M. Morgan, D. E. Oakley, J. S. Owen, M. W. Parker, ‡A. J. Pearce, M. J. Peto, J. G. Piccaver, D. J. Rigby, M. J. Roper-Hall, R. H. Sage, W. H. Scrase, M. H. Stroud, A. E. Szulman, N. A. Thomas, R. R. Trussell, Helen M. H. Wilson, Joyce E. Wiseberg, Joan S. Woodhouse, D. Zuck.

* Second-class honours. † Distinction in surgery. ‡ Distinction in medicine.

The following scholarships, etc., were awarded in the Faculty of Medicine:

Queen's Scholarship (Third Year): F. B. Buckley, Jean M. Smout. *Queen's Scholarship (Fifth Year):* Barbara M. Ansell. *Ingleby Scholarships:* C. A. Jewels, W. J. Walkden. *Arthur Foxwell Memorial Medal* and *Priestley Smith Prize in Ophthalmology:* J. N. Ormrod. *Sampson Gamgee Memorial Medal:* W. J. Walkden. *Queen's Scholarship (Final Year):* C. A. Jewels. *Leith Newman Prizes in Pathology (Fourth Year):* Margaret L. Fallon, Rose A. J. Whitelaw. *Peter Thompson Prize in Anatomy (Third Year):* Jean M. Smout. *Russell Memorial Prize:* J. L. Stafford. *Bertram Windle Prize in Anatomy:* B. D. Bower, E. W. Clarke. *John Barritt Nelson Memorial Gold Medal:* F. B. Buckley. *Foyle Prize:* N. K. Shinton. *Alexander Youngson Prize:* H. E. Schweinburg. *Lawrence Barnard Carlton Scholarship:* P. A. Bramley. *John Humphrey Memorial Prize:* J. A. C. Smith.

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated:

M.D.—I. Ansell, H. Dakin, B. Phillips, G. O. Thomas, P. H. Whitaker.

CH.M.—L. McK. Crooks.

FINAL M.B., CH.B.—*Part III:* Beryl G. Anscombe, G. Ansell, K. W. Baruch, B. Dover, Monica Drinkel, J. W. L. Edwards, P. Foster, B. R. Frisby, S. Gillis, L. Griffiths, B. B. Harrison, D. C. R. Jones, J. T. W. Jones, P. R. B. Jones, R. V. Kinnish, M. Kirwan, Joyce R. Lewis, J. B. Roberts, Corris Venables, H. Wickham, J. R. E. Wilson. *Passed in Separate Subjects:* A. D. Charnley and M. M. I. el Haddad (Medicine and Surgery). R. Ellam (Surgery and Obstetrics and Gynaecology). *Final Examination: Part II.—Passed in Forensic Medicine and Toxicology.*—Joan Evans, P. Hampson, Vivien P. Helme, Maureen M. Hoey, D. T. L. Hughes, Nellie Hughes, J. C. Rumber, L. Robinson, L. Rosenbloom.

UNIVERSITY OF ST. ANDREWS

The following candidates have been approved at the examination indicated:

M.B., CH.B.—*Diana Butler, †R. T. D. Emond, †D. A. Grewar, †K. R. Keay, †W. D. Mackenzie, †Nancy M. E. Robertshaw, †T. Sanderson, †A. T. Sandison, †D. P. A. L. Scott, I. M. Baird, W. Bryson, W. H. Condie, Agnes K. Conn, Vivienne A. Croxford, Jean B. Davidson, Janet M. Donald, Christina C. Ferguson, D. M. Ferguson, J. G. Ferguson, A. P. M. Forrest, W. Frain-Bell, A. R. G. Gordon, Jean G. Gordon, J. S. Innes, N. G. Johnston, R. I. Just, W. F. Kinnear, J. L. McDougall, W. S. Macmillan, Margaret Mann, Louise I. S. Millar, J. G. Millers, A. A. Mudie, I. S. Mudie, N. Murray, Margaret H. Mutch, E. G. Naylor, W. D. Paterson, Ruth Sabel, Mary J. M. Shaw, R. D. Simpson, T. V. Simpson, R. R. Stevenson, D. C. H. Tullis, H. R. Turner, Mary E. Walker, I. C. Whyte, H. Williams.

* With distinction. † With commendation.

UNIVERSITY OF DUBLIN

At a Congregation, held on July 4, the following medical degrees were conferred on students of the School of Physic, Trinity College:

M.D.—R. T. Burkitt, H. L. Parker.

M.B., B.CH., B.A.O.—Etheline E. Hopkins-Brady, Margaret E. Brook, Elizabeth P. Carlisle, W. J. H. Collins, G. F. Corbett, P. F. Daly, Gwendoline E. Davison, D. A. N. Drury, R. F. Fouché, R. Graham, D. McK. Hamilton, J. W. Jackson, J. D. Llewellyn-Jones, F. T. Kee, G. L. Kennedy, Jean H. King, J. G. Kirker, R. L. McClelland, T. C. Millar, Mary A. Montgomery, J. H. Murphy, J. B. Musgrave, R. Smith, Barbara M. Stokes, S. D. Walsh, Anna M. Grove-White, S. W. Wolfe.

QUEEN'S UNIVERSITY, BELFAST

The following candidates have been approved for medical and surgical degrees:

M.D.—J. W. Beattie, J. T. Carson, H. S. Hogg, H. E. Rutherford, S. Ruttle, *By Thesis:* S. J. Allen (with high commendation), Elizabeth F. McKeown (with gold medal), Yvonne A. Murray (with gold medal).

M.CH.—J. P. McGinley.

M.B., B.CH., B.A.O.—D. A. Bain, D. M. Bell, G. Dornan, Laurna Evans, H. F. Fleming, R. Fulton, E. M. Hamilton, Eileen E. M. Hanna, J. T. Heron, A. C. Houston, M. H. A. Jamison, R. V. C. Kerr, R. F. Keys, Joan B. M. Leith, T. G. Lowry, J. J. McSorley, J. D. H. Mahony, W. M. Martin, J. J. O'Brien, C. F. Patterson, Kathleen Powell, J. H. Stewart, Laura Thompson, S. Thompson, R. P. Thornton, J. F. Walsh, D. H. Warden, A. Warnock J. E. Watson. *With Second-class Honours:* J. D. F. Leith, J. R. Milliken, S. R. C. Ritchie.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

ELECTION TO THE COUNCIL

On July 5 four Fellows were elected into the Council to fill the vacancies caused by the retirement in rotation of Surg. Rear-Admi. C. P. G. Wakeley, Mr. L. E. C. Norbury, and Surg. Capt. L. C. Rogers, and by the death of Mr. C. A. Joll. The Fellows elected were:

	Votes
CECIL PEMBREY GREY WAKELEY (King's College) ..	840
LAMBERT CHARLES ROGERS (Cardiff)	835
LIONEL EDWARD CLOSE NORBURY (Royal Free) ..	716
ROBERT JOHN MCNEILL LOVE (Royal Northern) ..	546

The following were the other candidates:

Arthur Dickson Wright (St. Mary's)	483
Arthur Lawrence Abel (Princess Beatrice)	417
Henry Hamilton Bailey (Royal Northern)	349

In all 1,322 Fellows voted; in addition 20 votes were found to be invalid. Surg. Rear-Adml. Wakeley, Mr. Norbury, and Surg. Capt. Rogers are all elected for the full period of eight years. Mr. McNeill Love is elected as a substitute member for two years.

Medical News

A meeting of the Association of Clinical Pathologists will be held at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., on Friday and Saturday, July 20 and 21, at 9.30 a.m.

A clinical meeting of the London Association of the Medical Women's Federation, arranged by members of the staff of University College Hospital, will be held at the Maternity Hospital, Huntley Street, W.C., on Saturday, July 21, at 3 p.m.

By courtesy of the Royal Society of Medicine, the British Association of Physical Medicine has arranged to show a sound film on the management of infantile paralysis by the Kenny method. This film, which claims to adduce evidence in support of the rationale underlying the originator's unorthodox concept of the disease, will be shown in the Barnes Hall, at 1, Wimpole Street, W., on Monday, July 30, at 2.30 p.m. A discussion will follow an interval for tea. The President and members of the B.A.P.M. extend a cordial invitation to Fellows of the R.S.M. interested in this subject.

Prof. A. Baudouin, who visited England recently with other leading French physicians and surgeons, has been re-elected dean of the Paris Faculty of Medicine.

Prof. Roussy, member of the Institute and rector of the University of Paris at the beginning of the war, has been elected general secretary of the Académie de Médecine in succession to the late Prof. Achard.

Boots Pure Drug Company Ltd., of Nottingham, have recently presented the diabetic department of King's College Hospital, London, with funds to provide research scholarships in diabetes and allied diseases. The amount of this gift is £1,000 a year for seven years.

Dr. Smith Ely Jelliffe has resigned the post of editor of the *Journal of Nervous and Mental Diseases*, which he has held for forty years, and is being succeeded by Dr. Dolan D. C. Lewis, of the College of Physicians and Surgeons, Columbia University.

Licences are still required in respect of the export to the Channel Islands of drugs to which the Dangerous Drugs Acts apply. The licences will, as in the past, be issued by the Drugs Branch, Home Office.

The May-June issue of *Industrial Welfare and Personnel Management*, the journal of the Industrial Welfare Society, includes a two-years record of a group medical scheme for industrial welfare by C. F. Richards, a note on penicillin in industrial medicine by Dr. H. B. May, and an account of the first year's work of the Roffey Park Rehabilitation Centre by Dr. T. M. Ling, medical superintendent.

The decoration of officer of the Order of Polonia Restituta has been conferred on Mr. A. H. McIndoe, C.B.E., M.S., F.R.C.S., by the President of the Polish Republic in recognition of services during the war.

The Commonwealth Government of Australia has given £5,000 to the Queen Victoria Cottage Hospital at East Grinstead, Sussex, in recognition of its work for Australian airmen suffering from burns requiring plastic surgery.

The late Dr. Herbert Thomlinson Nixon, of Liverpool, who left estate valued at £53,105, bequeathed, subject to two life interests, £1,000 each to the Royal Medical Benevolent Fund and Epsom College.

A conference of medical consultants, India Command, and medical specialists, Central Command and North-Western Army, India, was held at King Edward Medical College, Lahore, in February, 1944. A large number of officers were present and took part in the discussions on various short papers presented—for example, on malaria, tuberculosis, enteric fevers, tropical eosinophilia, dysentery, typhoid, anaemia, and malnutrition. A 150-page report of the proceedings of the conference has now been published and is available in the library of the B.M.A.

The late Dr. James Richard Whitwell, for many years honorary librarian of the Royal Medico-Psychological Association, who died on Jan. 9, 1945, left £26,318. Subject to a life interest he bequeathed the residue of his estate to form a Whitwell Fund for the benefit of mental patients of St. Audry's Hospital, Melton, or of the Mental After-Care Association, or otherwise for the benefit of "that class of patient to whose welfare I have devoted such a large portion of my life."

The Central Midwives Board has announced an alteration in its rules of training whereby, from a date to be announced later, registered sick children's nurses will be admitted to the shortened period of training extending over six calendar months for the first certificate of the Board.

The Order of the Nile (Fourth Class) has been conferred by the King of Egypt upon Dr. A. R. McKelvie, ophthalmic surgeon, and Dr. N. L. Corkill, chief inspector, Sudan Medical Service, in recognition of valuable services rendered by them.

Alfred Charles Fisher, M.D., has been nominated an unofficial member of the Legislative Council of Northern Rhodesia.

Mr. James C. Young has been elected President of the Pharmaceutical Society of Great Britain.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week there were fewer notifications of infectious diseases, the totals falling by the following amounts: measles 1,264, dysentery 177, scarlet fever 77.

Scarlet fever notifications dropped by 34 in Lancashire. The incidence of diphtheria fell by 17 in Essex, but rose by 16 in Gloucester. Notifications of whooping-cough rose by 27 in Lancashire, and by 22 in London, but fell by 34 in Yorks West Riding. There was a general fall in the notifications of measles, the only important exception being a rise of 30 in Suffolk, where the total was the largest during the current epidemic.

Dysentery notifications, 287, were the lowest since the first week of the year. The only fresh outbreak reported during the week was in Nottinghamshire, Nottingham C.B. 15. The other principal centres of infection were Lancashire 51, London 49, Northumberland 19, Warwickshire 18, Essex 14, Yorks West Riding 14, Derbyshire 11, Kent 10, Oxfordshire 10.

Scotland recorded an increase of 54 and 20 in the notifications of measles and dysentery respectively, but the incidence of diphtheria fell by 14. In Edinburgh numbers of cases of dysentery rose from 11 to 23, and in Glasgow from 25 to 34. It is feared that Glasgow may have a recurrence during the summer of gastro-enteritis, which last August and September caused 269 infant deaths. The cause of this outbreak was never determined, but milk was suspected, as only 22 of the 522 infants admitted to hospital were breast-fed. Steps to forestall an outbreak are being taken by the medical officer of health.

In *Eire* notifications of measles fell by 31, and those of whooping-cough by 21; there was a slight rise of 7 in diphtheria.

Quarterly Returns for Eire

The birth rate during the first quarter of this year was 21.5, which is 1.2 below the rate for the March quarter of 1944. The infant mortality was 89 per 1,000 registered births, being 12 below the rate for the corresponding quarter of 1944, but between 5 and 11 above the rates for 1940–2. The general death rate was 18.4 per 1,000, which is 1.7 below the rate for the preceding March quarter: 718 deaths were attributed to pulmonary tuberculosis, and 250 to other forms, the former being 160 below the average of the five preceding first quarters, and the latter 26 above.

Week Ending June 30

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,255, whooping-cough 1,194, diphtheria 421, measles 6,004, acute pneumonia 424, cerebrospinal fever 52, dysentery 292, paratyphoid 7, typhoid 5, typhus 1.

No. 25

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended June 23.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1945					1944 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	46	3	25	1	2	53	2	32	2	1
Deaths		1	—				—	—		
Diphtheria	422	22	99	76	14	487	33	119	55	17
Deaths	4	—	1	1	—	4	—	—	5	—
Dysentery	287	49	97	6	—	201	10	88	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	—	—	—	—	—	2	—	—	1	—
Deaths		—					1			
Erysipelas			35	15	2			39	8	6
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				43					11	
Deaths	41	5	8	11	5	38	7	13	12	3
Measles*	6,626	342	405	39	10	2,538	139	282	129	45
Deaths	5	1	—	—	—	—	—	2	—	—
Ophthalmia neonatorum	78	1	21	—	—	74	5	10	—	—
Deaths										
Paratyphoid fever	4	—	3 (B)	—	—	7	1	1 (B)	5 (B)	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal†	376	22	3	5	2	452	17	5	5	6
Deaths (from influenza)	7	—	—	—	—	12	—	1	—	—
Pneumonia, primary			184	21				187	13	
Deaths		22		15	9		23		11	9
Polio-encephalitis, acute	1	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	6	—	—	—	2	15	—	2	1	—
Deaths		—					—			
Puerperal fever		3	21		—		4	13		—
Deaths										
Puerperal pyrexia‡	132	9	13	3	—	138	9	25	1	1
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,237	47	207	18	33	1,451	90	185	18	56
Deaths	1	—	—	—	—	3	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	7	—	5	3	1	10	1	22	12	1
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	1	—
Deaths				—	—				—	—
Whooping-cough*	1,117	70	96	33	8	2,424	233	153	63	16
Deaths	2	—	2	1	—	11	1	1	4	
Deaths (0–1 year)	304	42	47	27	20	303	36	58	31	14
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,010	551	582	197	115	4,777	1206	604	197	116
Annual death rate (per 1,000 persons living)			13·2	12·7	§			13·9	12·8	§
Live births	7,031	834	887	402	288	7,575	840	1048	449	270
Annual rate per 1,000 persons living			17·7	25·9	§			21·3	—	§
Stillbirths	219	24	38			198	13	35		
Rate per 1,000 total births (including stillborn)			41					32		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to movements of population, birth and death rates for Northern Ireland are still not available.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

ANY QUESTIONS?

Pregnancy and "White-leg"

Q.—*Would you advise a healthy woman, aged 30, who had white-leg after a breech birth 2 years ago to have any more children? If so, what is the likelihood of a recurrent phlebitis during and after the pregnancy?*

A.—Another pregnancy should not be discouraged. There is no increased risk of a deep thrombosis in either leg after another confinement, and most women who have had white-leg bear subsequent children without any great disability. If the deep venous circulation is permanently impaired the leg is likely to swell to some extent during another pregnancy and the superficial veins may dilate. This could be controlled by an elastic supporting stocking and by adequate rest. The risk of puerperal thrombophlebitis in any superficial varicose veins which might develop could be minimized by encouraging active exercises immediately after delivery and possibly by limiting the lying-in period to 4 or 5 days.

"Flat Feet" in Infants

Q.—*At what age does the arch of the foot become apparent? Does a child of 1 year 9 months who is inclined to throw the weight on the inner side of the foot, when barefoot, need corrected shoes? She wears heels of the "start rite" type with a wedge prolonged under the instep. With these the tendency to throw the weight on the inner side of the foot is not noticeable. She is tall and heavy beyond her age, though not fat.*

A.—The popular view is that all babies have flat feet. On the contrary, at birth the long arch is present, but in the first year or so of life is usually disguised by the plantar fat pad, which in some infants is so prominent as to cause undue maternal anxiety. A child, as described, who really does tend to throw an abnormal amount of weight on the inner side of the foot is probably suffering from a mild congenital talipes valgus. For such a case the Thomas heel, in which, on the inner side, there is a forward extension of half an inch and a 1/16-inch wedge, is advisable. Frequently medical men wedge the inner side of the sole also: this we believe to be bad, for the development of a normal gait does depend upon firm implantation of the first metatarsal head upon the ground. As with all children with mild postural deformities, the aim should be to remove artificial aids as soon as possible. It is, therefore, important to educate the child into good habits of control by games and suitable remedial exercises to improve control in all the muscles of the foot—not, as is so often done, just in the invertors and plantar flexors.

T.A.B. Treatment of Arthritis

Q.—*A nurse aged 50 has developed a multiple arthritis which threatens to cripple her. Would T.A.B. injections be of any use? If so, what doses are recommended, how many, and at what intervals should the doses be given? Is there any danger of adverse effects from the injections?*

A.—Foreign-protein therapy, of which T.A.B. vaccine is an example, may produce temporary improvement in rheumatoid arthritis, but rarely permanent benefit. It is most likely to prove helpful when recovery has begun but seems to be at a standstill. The object is to produce a febrile reaction, and in individuals who have been previously immunized with typhoid vaccine this may be difficult or impossible to effect. Since the shock produced is the object in view it is obvious that the method is to be avoided in the presence of any debilitating condition which might render the patient unfit to bear the further strain, and therefore any circulatory weakness, cardiac disease, hypertension, or acute illness are contra-indications. The usual dosage is to begin with 10 to 25 millions intravenously, repeated every four or five days provided that the temperature has been normal for 24 hours; if the reaction has been severe the same dose should be used, but otherwise it should be increased up to double the first dose. The injections should be continued at the same intervals with a proportionate increase, but if no benefit is experienced should not go beyond four, and in any case not more than five or six should be given and only if the patient is not too exhausted by the reactions. It is well to keep the patient in bed until the temperature is normal after each injection, and also for a few hours before injection. Fluids should be given freely, and the usual methods of treating shock must be adopted if this is severe. There is usually an increase in the symptoms at first, followed by improvement. The adverse effects are those which may arise from shock in enfeebled individuals.

"Struck off the Register"

Q.—*Why does the General Medical Council try cases which have already been tried by the civil courts? If a doctor has been struck off the Register, can he reapply for admission? What happens to his practice when he is struck off? How long must he wait before being re-registered?*

A.—The General Medical Council is not a court of law but a statutory body appointed to keep the *Medical Register* and to see that all practitioners registered in it shall be fit and proper persons to practise. When they call a practitioner's conduct in question, they are concerned merely with inquiring whether he is fit or not to remain on the *Register*. Therefore the findings of a civil court do not bind them, for the civil court has been inquiring into a different issue, often with different parties to it. The Council until recently made an exception in cases where a practitioner was reported to it by the authorities of the Divorce Division as having been respondent or co-respondent to a divorce petition in circumstances which suggested that he had committed adultery with a patient. In such cases the Council's practice was to take the evidence and findings of the Divorce Court as binding on them and to refuse to allow the practitioner to bring evidence in contradiction. The Court of Appeal held in *Ex parte* Spackman (1943) 2 All E.R. 337 that this practice was wrong, and that the Council must hear evidence which either party desires to give as well as the transcript of the Divorce Court proceedings.

The position is different where a practitioner has been convicted before a criminal court of an offence, for in that event the Council has power by section 29 of the Medical Act, 1858, to erase the practitioner's name merely on proof of the conviction.

A doctor is entitled to apply for readmission at any time after his name has been erased, and in dealing with the request the Council will consider whether he is likely to have profited by the penalty of erasure to such an extent as to be fit for readmission. Applications for readmission come before the Council at its November session. The applicant must state the ground on which he is applying, and support the application with a statutory declaration and at least two certificates of his identity and good character signed by fellow practitioners or by a practitioner and a magistrate. The licensing body which gave the practitioner his qualifications originally, and the complainant, if any, may object in writing. The Executive Committee deals with the application and reports to the Council, which considers the report in private and announces its decision in public.

When a doctor's name is erased from the *Register* he is not prohibited from continuing to practise, but he must not hold himself out as registered, he may not use dangerous drugs or scheduled poisons, or do National Health Insurance work, or sign official certificates, or hold any public appointment. His activities are, therefore, severely restricted. Doubtless if he can find a friend to look after his practice he will do so. His former partners may elect to continue it, but as his erasure dissolved the partnership they are under no legal obligation to readmit him if his name is restored, nor can he claim any further interest in the partnership. He cannot continue to practise in association with a registered friend or partner, for his colleague would then be covering him and himself liable to penal erasure. Probably in many such cases an erased practitioner's practice disappears or becomes merged in those of his neighbours.

Haematoma after Hydrocele Operation

Q.—*How can post-operative haematoma in excision of a hydrocele be avoided?*

A.—It is likely that most surgeons have at some time in their early career been annoyed by the formation of a haematoma in the scrotum after they have performed the operation of the excision of the parietal layer of a hydrocele. There is hardly any operation in which it is so necessary to ensure accurate haemostasis, for the lax scrotal tissues exert no pressure on any bleeding vessel and easily allow blood to accumulate.

By due care it is always possible to avoid a haematoma. The blood vessels are close to the outer fibrous layer of the sac, and

sometimes it may be possible to peel out the inner thin and avascular lining membrane and avoid cutting away the thicker and vascular outer layer. This will prevent any danger of bleeding. Commonly, however, the fibrous layer must be removed, and then bleeding should be controlled by over-sewing the cut edge of the sac by a catgut suture. This is best done by stages. Section after section of the sac is cut and immediately over-sewn until the whole parietal layer is removed. One or more continuous sutures are used. The sac should not be cut too close to the testicle. Before closing the wound the greatest care should be taken to inspect the whole exposed area and to ligate or underpin even the smallest bleeding point. If this be done there will be no need to drain the wound. After operation the scrotum should be slightly elevated on a small pillow.

There is nearly always slight swelling of the testicle after the operation; this is probably due to the slight trauma caused by handling the organ. An inexperienced house-surgeon has been known to mistake this testicular swelling for a haematoma.

Ectopia Lentis

Q.—*A woman aged 34 was born with ectopia lentis; the lenses became dislocated and had to be removed, following secondary glaucoma. Her daughter, now aged 11, is suffering from ectopia lentis, the vision of the right eye being 1/60, with −20.0 D. Sphere 2/18. The left vision is 6/18 when corrected. What operation would you advise for the right eye in view of the mother's lenses having been dislocated?*

A.—Before attempting operation certain points must be considered: (*a*) Are there any myopic fundus changes and what degree of vision could be expected if operation were successful? (*b*) What is the possibility of detachment of the retina following extraction? (*c*) Having in view the fair vision in the other eye, and knowing the extreme difficulties of any operation, should the worse eye be touched? If the lens can be coaxed into the anterior chamber, the operation is somewhat simplified; otherwise the extraction is very difficult, since the lens tends to run away from any instrument touching it and is usually accompanied with loss of vitreous.

Gastric Ulcer and Femoral Thrombosis

Q.—*Four years ago a patient developed a thrombophlebitis of the left leg, and subsequently a typical gastric ulcer. I now have notes of seven somewhat similar cases in four years. One is tempted to theorize and suppose that products of thrombolysis might possibly act as toxins and cause an ulcer of the duodenum. Is this a known fact, and if so, can the condition result from a "white-leg" of puerperal origin? (My cases were all in women of menopausal age or older.)*

A.—Gastro-duodenal ulceration is present in approximately 2.5% of adults and therefore must frequently coexist with other diseases. No statistical evidence for a special association of femoral thrombosis and peptic ulcer has been seen, and one's impression is that peptic ulcer is uncommon following "white-leg" in the puerperium. Nevertheless, the two factors which favour thrombophlebitis—sepsis and increased coagulability of the blood—also favour the formation of ulcers. The association of sepsis and acute gastric ulcer is well known. Chronic peptic ulcer has been proved to be unduly common in polycythaemia vera, in which there is a tendency to thrombosis. The ulcers are presumably due to thrombosis in the vessels supplying the gastro-duodenal mucosa, and there seems no need to postulate a gastrotoxic action of the products of autolysis of the thrombus in the leg.

Ante-partum Haemorrhage

Q.—*A second-para aged 20, seven months pregnant, called me for severe haemorrhage. On P.V. examination there was a two-finger dilatation, and a tense bag of membranes could be felt. I punctured the membranes to reduce the haemorrhage and quicken the process of labour; instead of the amniotic fluid about a pint of blood and clots came out in a gush. After the condition of the patient was restored, I examined her again. The bleeding had stopped. The uterus was contracting well and the head was fixed. In another six hours the entire foetus was expelled intact in the amniotic sac complete with the placenta. Obviously the bleeding was inside the two membranes, though a part of the placenta was also separated beforehand and a biggish clot was delivered with the foetus. What is the explanation of the condition?*

A.—It is doubtful whether the evidence presented is sufficient to justify the conclusion that the haemorrhage occurred between the chorion and the amnion. Unless liquor escapes it can be difficult to be certain that one or both membranes have been ruptured, and it is just possible that the manipulations in this case released a clot with some dammed-up fluid blood from the chorio-decidual space. If the blood was lying between the chorion and amnion, then, after the products of conception were delivered, the area of separation of the two membranes should have been obvious and there should also have been some remaining blood-clot to confirm the site of the haemorrhage.

If it be assumed that the blood was lying between the chorion and the amnion, then it must have been of maternal origin, if only because the amount was greater than the total volume of foetal blood (in foetus, cord, and placenta) at term. In cases of concealed accidental haemorrhage the blood can burst through the membranes and enter the amniotic sac, and reference to this is found in most of the larger obstetrical textbooks. In certain circumstances, such as an area of weakening or degeneration in the chorion, associated with a tough amnion, it is conceivable that it might break through the chorion only, and then track down between the two membranes. If such was the case here, the tear in the chorion should have been seen after delivery.

Haemorrhage between the chorion and amnion can also occur without any retroplacental haemorrhage, and a case was recently described by W. H. Carlisle (*J. Obstet. Gynaec. Brit. Emp.*, 1944, **51**, 541). In that case the position was proved by demonstrating blood-clot remaining between the membranes after delivery, and it was suggested, although not proved, that the source of the bleeding was the marginal sinus of the placenta.

Suture Materials and their Sterilization

Q.—*What are the various suture materials made of? I should particularly like to know about silkworm gut, salmon gut, silk, and catgut. Can you explain the peculiar nomenclature? Can you let me have a few references to methods of sterilizing suture material?*

A.—Suture materials are of three principal kinds: thread (silk, linen, or nylon), catgut, and silkworm gut. Catgut is spun from strips of the submucosa of sheep's intestine: the origin of its name is obscure. To obtain silkworm gut, silkworm larvae are immersed in acetic acid, the two silk glands are then removed, and the viscous fluid which they contain is drawn out into threads of different length and thickness which are dried in the sun. This type of gut is used largely for casting-lines in rod-fishing; it is often known even in surgical circles as fishing gut, and salmon gut is the stronger variety required for big fish.

Instructions for sterilizing suture materials will be found in most textbooks of surgery. The only serious difficulty arises in connexion with catgut, which is very liable, owing to its origin, to contain the resistant spores of such organisms as *Cl. tetani*, but is softened and spoiled by autoclaving. It can be sterilized by heat and other means during the process of manufacture, and if bought as "sterile surgical catgut" requires no further sterilization. If bought "raw" it can be sterilized only by immersion for ten days in Claudius's solution (iodine 1 g., pot. iod. 1.5 g., water 100 c.cm.). The sterilization of catgut, and the utter inefficacy of other chemical methods of disinfecting it on which reliance has been placed with disastrous consequences even in the recent past, are fully dealt with in the monograph entitled *The Preparation of Catgut for Surgical Use*, by W. Bulloch, L. H. Lampitt, and J. H. Bushill (M.R.C. Spec. Rep. Ser. No. 138, London, 1929). All other suture materials are usually boiled.

Children and Dried Milk

Q.—*There are a number of different makes of dried milk on the market, and the published compositions of a given type (full cream, half cream, etc.) are almost the same in terms of fat, protein, and carbohydrate. Yet it is sometimes stated that a child may not be suited to one make and yet thrive on another. Can individual susceptibility to a particular brand exist? If so, wherein does the difference lie?*

A.—Foods of approximately the same composition can only have the same effect as regards digestibility and gain in weight provided they are given in the same strength or dilution. Magical effects have often been attributed to dried milk "X," for example, as compared with National Dried Milk, even in that particular part of the country where it is known that they are identical. It follows that the good effects attributed to a special brand can only be due to (*a*) the fact that it has been given in a different dilution, or with additions; or (*b*) that the child got well while on this particular brand. This is the most likely explanation in most cases, for so many of the disorders of infancy produce gastro-intestinal symptoms and signs. It is the baby that is wrong in so many cases, not the type of feed, and a change of food is seldom the right move. This must be particularly stressed when the baby is breast-fed, for then a change of cow's milk for symptoms such as vomiting may be equivalent to signing a death warrant.

Spraying Enclosed Spaces

Q.—*Is paraffin or kerosene the best solvent for the spraying of enclosed spaces, such as mess-decks?*

A.—Kerosene (paraffin) is about the most satisfactory carrier liquid for insecticides available at present, since it combines effectiveness, cheapness, and availability with low toxicity to man. It

must be realized that there is some fire risk, depending on the flash point of the grade used, and therefore all naked flames must be extinguished and smoking prohibited while spraying is in progress. The most desirable type for many insecticides is "odourless distillate," a grade purified by removal of aromatics (which cause the smell of ordinary paraffin) and of a comparatively high flash point. The only disadvantage of odourless distillate is that it is a rather poor solvent for D.D.T. and will take up only about 3 to 4% compared with the 5 to 8% dissolved by crude kerosene. Some of the unpleasant features of spraying in confined quarters can be mitigated by using a coarser spray. The fog produced by very fine atomizers is required only where it is essential to kill *flying* insects rather quickly.

Intravenous Adrenaline

Q.—*In the* JOURNAL *of Feb. 10, 1945 (p. 208), it is stated that "intravenous injection of adrenaline is a dangerous procedure." In the* JOURNAL *of April 21 (pp. 567, 568), Lieut.-Col. D. C. Macdonald, referring to Prof. Ascoli's treatment for malaria by intravenous adrenaline, states that "it is harmless to the host." It is unlikely that both of these statements can be correct. I should welcome further information.*

A.—Prof. Ascoli's treatment of malaria by intravenous injection of adrenaline has been carried out by this time in a large number of subjects and has at least sufficed to demonstrate that intravenous adrenaline is nearly always harmless, though it is very alarming to the subject. It is safe to say that in patients whose heart and vessels are not affected by pathological changes adrenaline is quite harmless, because it is so rapidly destroyed. In those in whom pathological changes have occurred the sudden great rise of blood pressure which adrenaline produces when put into a vein must expose them to the risk of haemorrhage. The view commonly held that adrenaline injections are always dangerous arises from the effects produced by adrenaline in conjunction with other substances, of which chloroform is the outstanding example. A recent investigation of Ascoli's method of treating malaria, which has not been published, indicates that when a carefully controlled series of observations is made patients suffering from malaria obtain no benefit from a course of intravenous injections with adrenaline.

Hay-fever

Q.—*What is the best treatment for a case of hay-fever now that attacks are at their worst? Adrenaline and ephedrine are being used, though they afford little relief. Is it true that desensitization is ineffective unless carried out before the Timothy-grass pollen is in the air? If not, can you tell me the best way to carry out desensitization? The patient is 27 years old and is severely affected, though he has not suffered from hay-fever before this year.*

A.—Desensitization is probably the best treatment for this patient, presuming that he has been shown to be sensitive to pollen. Desensitization may be attempted by either the co-seasonal method or the rush method, but the former is the one recommended. In the co-seasonal method treatment is begun with 10 to 20 units of pollen along with 0.2 to 0.3 c.cm. of 1 in 1,000 solution of adrenaline hydrochloride. Injections are repeated daily, the dose being increased by 20 units until a maximum of 80 units is reached. After relief occurs the frequency of injections may be reduced to every two or three days. Increase in symptoms would suggest that the level of dosage was too high. For the rush method patients should be admitted to hospital under the care of an experienced allergist and treated in a pollen-free room. Treatment is begun with minimal doses, as in the routine method, but the injections are repeated every one to four hours and the number of units is increased as rapidly as possible, until a final dose of several thousand units is reached. Unless adequate skill and facilities are available rush therapy should not be attempted, particularly during the pollen season.

Penicillin for Acne Vulgaris

Q.—*Is penicillin cream a better remedy for acne vulgaris than the old-time treatments with zinc lotions, x rays, etc.? If so, how is the treatment applied?*

A.—Acne vulgaris is often regarded as a physiological rather than a pathological condition because of its presence—perhaps as no more than one or two blackheads—in the majority of adolescents. Its full development seems to depend upon the combination of an age-endocrine factor and a seborrhoeic skin, the second part being favourably influenced by sulphur, *x* rays, etc. Secondary infection in acne is an accidental rather than an essential part of the acne "formula"; where this occurs, and if it is due to a penicillin-sensitive organism, then a penicillin cream containing from 200 to 1,000 units per gramme is of some benefit. In the present state of knowledge it would thus seem that penicillin can have no more than an ephemeral effect—a view open to modification upon wider experience.

INCOME TAX

Expenses Allowance

"DELTA" is in full-time employment receiving a salary and bonus and in addition "an annual allowance of £100," apparently in view of the fact that he maintains a house in London to which he returns for the week-ends. In the past this allowance was not assessed, but since "pay as you earn" came into operation tax has been deducted from it.

*** The deduction of tax (whether correct or not) is not the final test; an assessment will presumably be made in due course, as in past years, and on receipt of a notice of that assessment "Delta" will see whether the allowance has been included in the amount assessed. If it has, he can lodge an appeal; if it has not the notice will presumably show an over-payment of tax and inform him how the excess can be recovered. Section 26 of the Finance Act, 1942, provided a special deduction (maximum £10) for expenses of this nature, and it may well be the case that the £100 is correctly chargeable subject to the statutory deduction of £10.

Expenses in Connection with Different Appointments

H. P. holds an appointment for which he draws a fixed salary. He has, with permission, accepted two other appointments, one of which at least will entail travelling and hotel expenses, in addition to work at his residence. What expenses can he claim?

*** So far as the travelling and hotel expenses are concerned H. P. will have no claim in law, owing to the restriction of allowable expenses under the Schedule E rules to expenses incurred wholly, exclusively, and necessarily in the performance of the duties of the office. The point has been taken to the Courts more than once—e.g., Cook *v.* Knott in 1887, and Ricketts *v.* Colquhoun in 1924—and it is an accepted principle that such expenses are incurred not "in the performance," etc., but anterior to the performance and in order that the individual concerned may put himself in a position in which he can perform his duties. As regards expenses at the residence, the basic question seems to be what additional expenses are in fact incurred (or what portions of the domestic accommodation are relinquished) in order to carry out the duties of the additional appointments. Possibly some small allowance could be claimed and, if necessary, supported by explanations.

Retirement from Colonial Service

F. F. inquires as to the basis of calculating the "£45" tax mentioned in a reply to "Colony" in our issue of Feb. 17, 1945.

*** On the facts as stated to us the only income expected to be received in the United Kingdom in the year ending April 5, 1946, was a proportion of a "salary," and £45 was the estimated amount of tax payable thereon.

Tax Due on Share of Partnership Profits

M. has recently ceased to be a member of a firm and has agreed to pay tax on his share of the income for the last year. The share amounts to £605 after deducting expenses. What is the amount of tax due on that sum?

*** Assuming that the whole of M.'s allowances are available to be set against this particular income—i.e., that no part has been absorbed by being set off against some other income—the calculation is as follows:

	£ s. d.	£ s. d.
Amount of profits £605 less £45 wear and tear ..		560 0 0
Deduct:		
Earned income relief	56 0 0	
Personal allowance	140 0 0	
Children allowance	100 0 0	
		296 0 0
		264 0 0
£165 @ 6s. 6d. in the £	53 12 6	
£99 @ 10s. in the £	49 10 0	
		103 2 6
Life assurance relief £13 @ 3s. 6d.		2 5 6
Net tax due		£100 17 0

Part-time Employment

F. M. is employed in part-time posts in two clinics. He does no private work. Can he claim deductions for (*a*) the cost of travelling to and from the clinics, (*b*) subscriptions to the B.M.A., etc., and (*c*) purchases of medical books.

*** The earnings are assessable under Schedule E and the stricter rule as regards expenses applies. The answers are therefore (*a*) No; (*b*) No, unless membership of the associations in question is required by the terms of his employment; (*c*) No.

Sale of X-ray Apparatus

E. H. bought an *x*-ray apparatus in 1930 for £250; he has since received allowances for wear and tear amounting in all to £75 and has now sold it for £100—leaving him in the position of having lost £250−(£75+ £100=) £175, i.e., £75 for which he has had no allowance.

*** If he replaces the apparatus he can claim a deduction of £75 as "obsolescence"; otherwise no allowance is legally due. The allowances for wear and tear in past years have clearly been inadequate, and if E. H. cannot claim "obsolescence," he may be able to induce the inspector of taxes to reopen the past year's assessments and increase the past allowances.

Examiner's Fees

C. B. acts "from time to time as an examiner for the General Nursing Council and the Central Midwives Board." Are these fees assessable under Schedule D or Schedule E?

*** An examinership can frequently be regarded as an appointment or employment, in which case the fees are legally assessable under Schedule E. In any case, however, if the examiner is engaged in general professional work, the income-tax authorities are willing to regard the fees as falling within Schedule D so that they can conveniently be included in one general return. This, however, does not affect any legal right the examining body has of deducting tax under the "pay-as-you-earn" system. If that is being done C. B. had better put the facts before his inspector of taxes.

"Cash" or "Bookings" Basis

W. B. ceased doing panel work a few years ago, but has recently rejoined the panel and now has a substantial number of panel patients. He has lodged an appeal against his assessment, claiming that he is entitled to calculate his gross income on a cash basis.

*** It has to be remembered that the cash basis has no legal validity. The correct basis for the gross income is the amount earned, less a reasonable allowance for probable losses by bad debts. Industrialists, traders, and others are refused the cash basis, but by long-standing practice it is allowed in the special case of medical practitioners because of the difficulty in such cases of estimating the loss by bad debts. But that concession applies only where a practice is proceeding normally, in which case the cash receipts can be assumed to give about the same result. In the case of a new practice or a large and sudden addition to the gross earnings of a practice (as in W. B.'s case), the value of the bookings exceeds the amount of the cash receipts, and the legal basis properly applies. In the circumstances we should not expect W. B. to succeed in his appeal.

LETTERS, NOTES, ETC.

Safe Milk for Children

Dr. W. A. LETHEM (Ministry of Health) writes: In your issue of June 9 (p. 829), under the heading "Safe Milk for Children," you say that legislation has been passed which will eventually make it compulsory for all milk to be pasteurized except that from T.T. and "accredited" cows. No such legislation has been passed. *Defence Regulation 55G* named certain milks which alone might be sold in "specified areas"—but no such area has yet been specified, and even if any are before the Regulation is annulled they will not cover the whole country. The raw milk to be sold in such areas was T.T. milk and accredited milk *from single herds*, not accredited milk generally, most of which is bulked and therefore cannot be traced to its source. This was admittedly a concession to the small farmer with his own milk round.

*** According to the White Paper on milk policy issued in 1943, "the Government proposes to schedule areas in which it will be an offence to sell milk retail unless it is (1) heat-treated as defined by Order, (2) lawfully sold as T.T. milk, or (3) 'accredited milk' sold by a retailer who sells the milk of a single 'accredited herd.'" In a debate in the House of Lords on July 27, 1943, Lord Woolton said that "within the next few months they [the Ministry of Food] would be able to increase the amount of pasteurized milk from 65% by another 15%, and that in a year from that time—eighteen months from now [i.e., in January, 1945]—they would be able to cover the whole of the country *in which they had introduced rationalization schemes*. The problem before the Government was to get sufficient new plant to deal with this increased quantity of milk. Broadly speaking, the rationalization schemes would deal with all the places where there was bulked milk." (Our italics.) On the basis of Lord Woolton's statement, the answerer of the question assumed that compulsory pasteurization would be gradually extended to milk that was not accredited or from T.T. herds. But if, as Dr. Lethem states, areas have not yet been specified, we have yet another melancholy example of the reluctance of the Government to protect the people at the cost of offending one section of a particular trade. Surely one visit to an orthopaedic hospital or children's sanatorium should convince any politician of the need for rigorous and immediate action. American troops in this country are not allowed to drink milk which is not from T.T. herds and is also pasteurized, which is the only milk which may be sold in most of the United States.—ED., *B.M.J.*

Swaddling and Thumb-sucking

Mr. JOHN A. MCCLUSKIE, B.Sc. (Royal Infirmary, Aberdeen) writes: I have been interested for some time in the practice described by Dr. S. H. Waddy (April 14, p. 529) of the binding of infants in swaddling clothes. May I call attention to some observations made by W. and M. G. Dennis in the American *Journal of Genetic Psychology* in 1940. The cradle board used by the Hopi Indians restricts movements of arms and legs to a severe degree. This practice does not increase the infantile mortality rate, and the infants do not even show any evidence of hyperactivity or rage reactions, which are the usual psychiatric result of restraint of movement. The reverse would appear to exist: in children over a year old attempts were made to return to the board during emotional tension. W. Dennis in the *Trans. N.Y. Acad. Sciences* in the same year stated that there was no evidence that swaddling in cradles produced either restlessness or rage reactions. His opinion is that so long as no purposive activity is thwarted, no reaction follows. On the other hand, there is considerable evidence that thwarting thumb-sucking by swaddling produces considerable reaction. But the widespread practice among midwives is closely allied to that of the Hopi Indians, and there is much to be said for it, although, as your correspondent indicates, it can be a dangerous practice, and I think it is one which would repay detailed investigations. Some experiments have been made with chickens which show that it is possible to control the development of habits—e.g., feeding with a dropper controls the pecking urge—so that binding in certain cases associated with replacement of the sucking habit by something else might very well be a way out for the thumb-sucking baby. Should we look to the biologists for that "something else"?

Penicillin and Other Drugs

Major A. J. CAMERON (R.A.M. College, Millbank) writes: In the *Journal* of June 16 (p. 864) I have read with considerable interest the letter from Major C. F. Garfit, of Lahore, referring to my medical memorandum on penicillin in ocular therapeutics which appeared in the *Journal* of Feb. 17 (p. 222). The answer to his query is "yes." The preparation of adrenaline used was the liq. adrenalin. hydrochlor. *B.P.* For myself I was not aware that it contained 0.5% chlorbutol, nor do I know what the effect of that drug is upon the sensitivity of penicillin. It is, I agree, a point of some interest, and I should like to know; but, as Major Garfit says, it is the liq. adrenalin. hydrochlor. which is used in practical ophthalmology most times.

Doubtful Penetrating Abdominal Wound

Dr. REGINALD FISHER (King's Langley) writes: Referring to Brig. Charles Donald's article (June 9, p. 802) on the above subject, may I mention a point that may help in these cases—a memory of the last war. When *x*-ray screening for foreign bodies I often noticed that if they were in the peritoneal cavity they were motionless (except sometimes in the liver), while if in the abdominal wall they moved freely with respiration.

An Eyeless Needle

Mr. J. L. AYMARD writes from Berlin, C.P., South Africa: My method has been for some two years past to take from a bundle of horsehair a single strand and one which tapers to a thin portion. A fine hypodermic needle, even a dental one, is broken off at its junction to the base holder. The thin end of the hair is threaded down the shaft from the eye; as soon as the strand wedges then it is withdrawn a little, cut off, and redrawn into the shaft. This same needle can be used over and over again. I have found the above very useful in fine plastic work and trust others may do likewise.

Herpes and Varicella

Dr. H. E. GIBSON (South Godstone) writes: The relation between herpes and varicella seems very complicated. Unlike Squad. Ldr. H. R. E. Wallis (April 21, p. 580), I had chicken-pox as a child, and again at 26. I have just had a patient who suffered from herpes at 42, and three weeks later her younger daughter, aged 7, developed chicken-pox.

Miss E. SYLVIA PANKHURST, honorary secretary of the Princess Tsahai Memorial Hospital Fund (3, Charteris Road, Woodford, Essex) asks physicians and surgeons who would be willing to accept a position on the staff of this hospital in Addis Ababa, Ethiopia, to communicate with her, so that she may lay their applications before the honorary medical committee. The chairman of the Fund is Lord Davies, and the honorary treasurer Lord Horder.